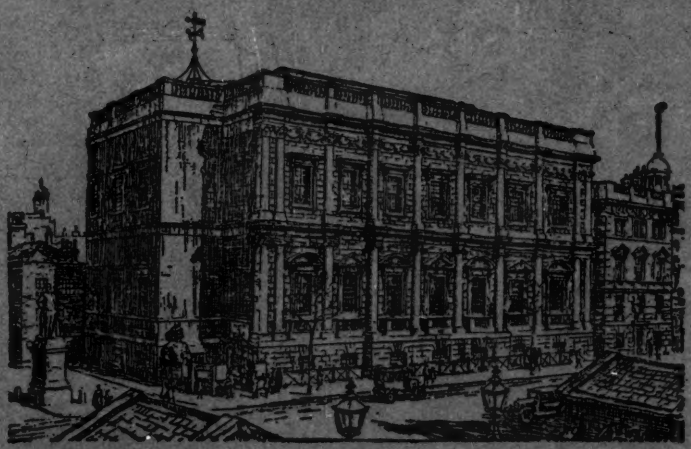
AUGUST 1954

JOURNAL



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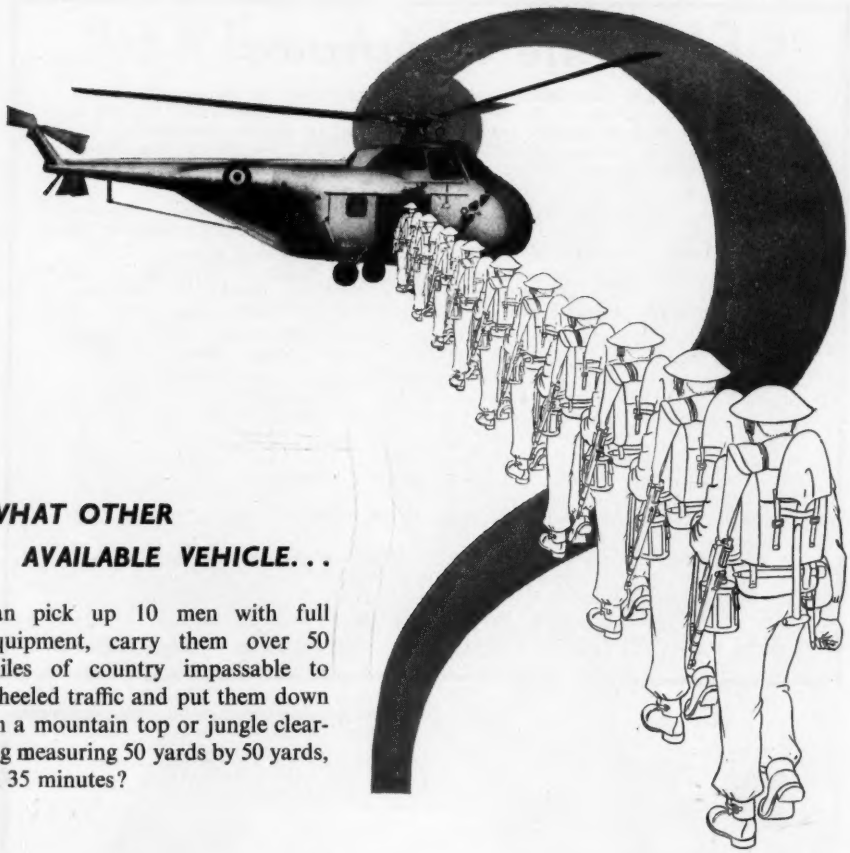

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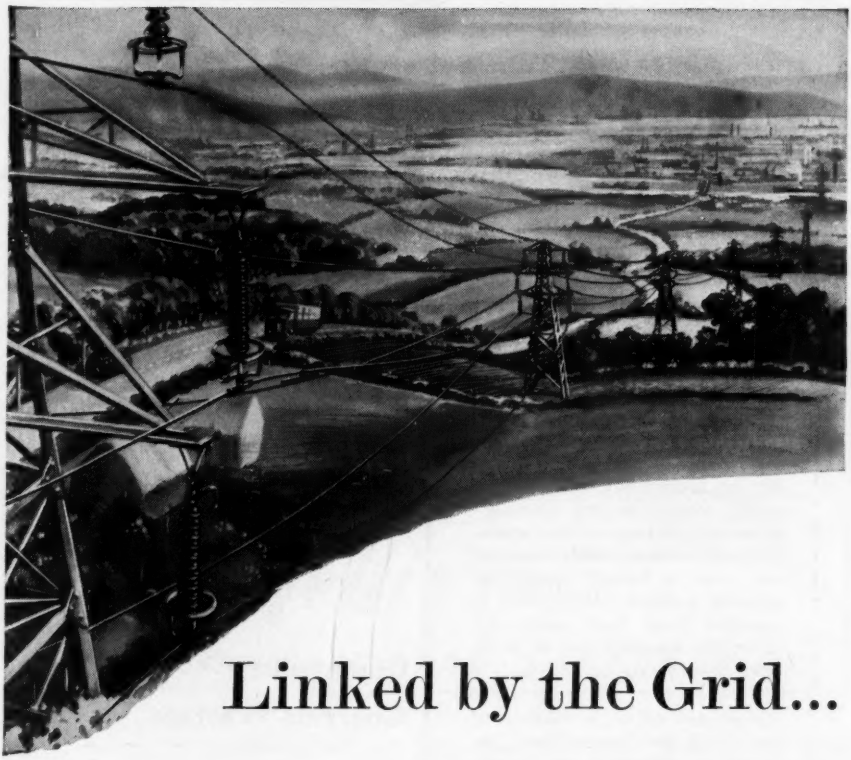

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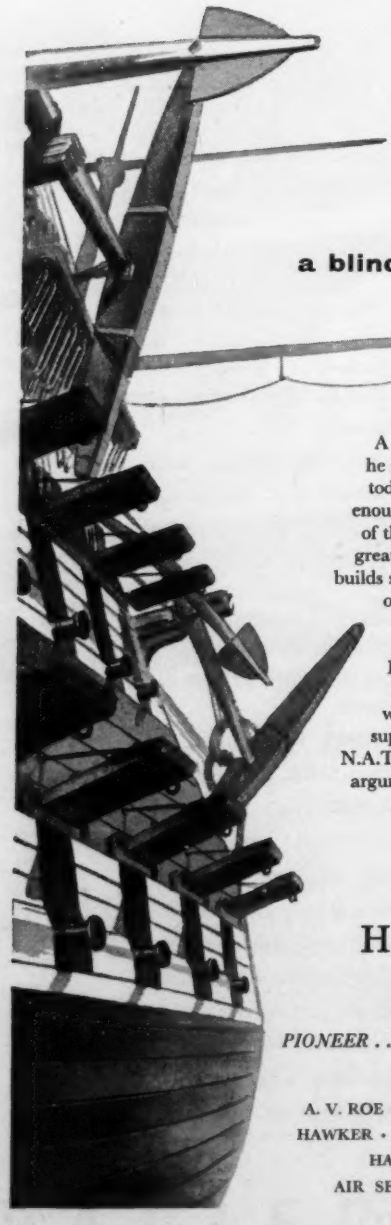

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JOURNAL

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Published by Authority of the Council

Postal Address: Whitehall, London, S.W.1.
Telephone No.: Whitehall 5854.
Telegraphic Address: "Russatus, Parl, London."

Vol. XCIX AUGUST, 1954 No. 595

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The Institution is situated opposite the Horse Guards in Whitehall. It provides members with a comfortable reading room containing the leading papers, periodicals, and principal Service (including foreign) Journals.

There is a lecture theatre where lectures are given followed by discussions in which officers of every rank are encouraged to take part.

Members can obtain on loan four volumes at a time from the best professional library in the Country. They are provided with a free copy of the JOURNAL.

There is a private entrance to the celebrated R.U.S. Museum in the former Banqueting House of old Whitehall Palace.

MEMBERSHIP

Commissioned officers on the active and retired lists of all H.M. Services, including those of the Dominions and Colonies, also midshipmen of the Royal and Dominion Navies, the R.N.R., R.N.V.R., and R.N.V.S.R. are eligible for membership without formality.

Retired officers of the Regular and Auxiliary forces, including the Home Guard, whose names no longer appear in the official lists, are eligible for membership by ballot.

Ladies whose names appear or have appeared in the official lists as serving or having served as officers in any of the three Services are eligible as above.

Naval, military, and air force cadets at the Service colleges are eligible on the recommendation of their commanding officers.

Officers' messes are not eligible for membership, but may subscribe to the JOURNAL.

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The JOURNAL is published in February, May, August, and November. Copies may be purchased by non-members, price 10s. 0d.: annual subscription, £2 post paid. Orders should be sent to the Secretary, Royal United Service Institution, Whitehall, S.W.1.

MUSEUM

The R.U.S. Museum is open daily from 10 a.m. to 5 p.m., except on Sundays, Christmas Day, and Good Friday. Members may obtain free passes for their friends on application to the Secretary.

Members of the Services in uniform are admitted free

SECRETARY'S NOTES

COUNCIL

August, 1954

Elected Members

Admiral Sir Geoffrey Oliver, K.C.B., D.S.O., has been elected a Member in the place of Rear-Admiral G. Barnard, C.B., C.B.E., D.S.O.

Air Chief Marshal Sir Leslie Hollinghurst, G.B.E., K.C.B., D.F.C., has been elected a Member in the vacancy caused by the election to Vice-President of Marshal of the Royal Air Force The Lord Newall, G.C.B., O.M., G.C.M.G., C.B.E., A.M.

Lieut.-General Sir John Eldridge, K.B.E., C.B., D.S.O., M.C., has been elected a Member in the place of Major-General G. P. Walsh, C.B., C.B.E., D.S.O.

NEW MEMBERS

The following officers joined the Institution between 15th April and 21st July, 1954 :—

NAVY

Midshipman J. Hawes, R.N.
Cadet C. Muggeridge, R.N.
Lieut.-Colonel H. A. Bass, R.M. (retd.).
B. J. Davis, Esq., late Paymaster-Lieutenant, R.N.R.
Lieutenant J. F. Watson, R.C.N.
The Rev. W. E. L. Smith, R.C.N.
Lieutenant-Commander P. S. Evans, R.N. (retd.).
Captain P. N. Walter, D.S.O., R.N. (retd.).
Captain B. Bethell, R.N.

ARMY

Lieut.-Colonel H. L. Boultbee, late Skinner's Horse.
Colonel J. C. Windsor-Lewis, D.S.O., M.C., Welsh Guards.
Colonel W. F. Parsons, C.M.G., D.S.O., late Royal Artillery.
Colonel M. J. H. Wilson, late The Queen's Own Cameron Highlanders.
Captain N. A. Welton, late The Royal Fusiliers.
Major F. Myatt, M.C., The Royal Berkshire Regiment.
Lieut.-Colonel R. G. S. Bidwell, Royal Artillery.
Major H. Birchenhough, M.B.E., R.E.M.E. (R.A.R.O.).
2nd Lieutenant J. R. H. Cooper, The Life Guards.
Captain A. N. P. Heron, Royal Artillery.
Captain J. L. Kerr, T.D., The Bedfordshire & Hertfordshire Regiment.
Captain C. G. T. Dean, late Royal Artillery.
Major-General D. C. Spry, C.B.E., D.S.O., C.D., Canadian Army.
Colonel T. F. M. Woods, O.B.E., M.D., late R.A.M.C.
Major M. Hobdey, R.A.O.C.
Captain A. H. T. Smith, The Royal Hampshire Regiment.
Major F. R. B. King, R.A.S.C. (A.E.R.).
Lieut.-Colonel M. Gilford, O.B.E., E.R.D., The Buffs (R.A.R.O.).
2nd Lieutenant C. J. Holroyd, The King's Royal Rifle Corps.
Captain J. F. Logan, The Queen's Own Cameron Highlanders.
Lieutenant R. G. Wilson, The Suffolk Regiment.
Major M. Turner, C.D., Royal Canadian Engineers.
Major K. M. MacD. Ross, 7th Gurkha Rifles.
Major W. A. Stewart, late Royal Engineers.
Captain W. E. Boyes, late Royal Artillery, T.A.
2nd Lieutenant Abogo Largema, The Nigeria Regiment, R.W.A.F.F.
Captain W. H. Doody, R.A.E.C.
Major P. J. S. Hamilton, M.B.E., The West Yorkshire Regiment.

AIR FORCE

Wing Commander C. N. Foxley-Norris, D.S.O., R.A.F.
Flight Lieutenant K. W. Simpson, R.A.F.
Lieutenant J. M. Smith, late R.F.C. and R.A.F.
Squadron Leader W. H. Pope, R.A.F.
Flight Lieutenant W. B. C. Young, R.A.F.

PRIZE MEMBERSHIP

Acting Lieutenant B. Ashby, R.M., has been awarded five years' free membership of the Institution.

COVENANTED SUBSCRIPTIONS

The Council hope that many more members will support the scheme for convenanted subscriptions, details of which have been circulated to all members.

This materially assists the Institution because it enables income tax at the full current rate to be reclaimed on each subscription. It is emphasized that a Deed of Covenant entails no additional expense to the member, but it goes a long way towards meeting the increased essential costs of administration. The Council wish to thank the many members who have re-covenanted since the beginning of the year.

To date, there are 1,438 annual and 285 life covenanted members.

Any member who has not received his copy of the scheme or who requires new forms is requested to communicate with the Secretary.

LIAISON OFFICERS

The following alterations to the list of Liaison Officers, as published in February, have taken place :—

Establishment or Command	*Name*
ARMY	
Southern Command ...	... Major G. B. Griffiths.
ROYAL AIR FORCE	
Flying Training Command	... Wing Commander S. G. Baggott, D.F.C.

MUSEUM

Additions

The Punjab and Indian Mutiny medals awarded to John Cunningham, 2nd European Bengal Fusiliers, and a Crimea Medal awarded to M. Cunningham, 1st Battalion, 1st Regiment (9646–7). Given by Messrs. T. Elvin & Sons, Ltd.

A pair of full-dress pistol holster covers, a shoulder belt pouch of The Queen's Own Light Infantry Militia (Tower Hamlets), 1856, and a shoulder belt pouch of the Rifle Volunteers (9648–50). Given by Captain R. L. B. Cunliffe, R.N.

A framed portrait of Admiral of the Fleet Lord Walter Talbot Kerr, G.C.B. Painted by Wilfred B. Egan, 1908 (9651). Bequeathed by Colonel J. D. Kerr.

JOURNAL

Offers of suitable contributions to the Journal are invited. Confidential matter cannot be used, but there is ample scope for professional articles which contain useful lessons of the recent war; also contributions of a general Service character, such as strategic principles, command and leadership, morale, staff work, and naval, military, and air force history, customs, and traditions.

The Editor is authorized to receive articles from serving officers, and, if found suitable, to seek permission for their publication from the appropriate Service Department.

Army officers are reminded that such articles must be accompanied by the written approval of the author's commanding officer.

LECTURES

The programme of lectures for the first half of the 1954–55 session is published with this number of the JOURNAL.

Arrangements have been made for an extension of the loudspeaker system from the Lecture Theatre to the Reading Room for use as required. Members and their guests will on arrival be accommodated in the theatre until it is full, when the excess number will be directed to the Reading Room.

Tickets will not be issued for any lectures in future as it is hoped that the new arrangements will accommodate all who wish to attend.

POSTAL SERVICE BY AIR MAIL

In order to keep the annual membership subscription to the lowest possible rate it is not economic in normal circumstances for the Institution to send letters, etc., overseas by air mail. Members who require answers by this service should enclose the necessary international reply coupons when making an enquiry.

CHANGES OF ADDRESS

Members are particularly requested to notify any change of address which will affect the dispatch of the JOURNAL.

Naval officers are strongly advised to keep the Institution informed of their address, as JOURNALS sent to them via C.W. Branch of the Admiralty are invariably greatly delayed.

As a serving officer is liable to frequent changes of station, it is better for such members to register either a permanent home or a bank address.

CHRISTMAS CARDS

Orders for Christmas cards, specially designed for members of the Institution, can now be placed.

Card A has the crest of the Institution on the outside and inside a reproduction of a black and white sketch of the exterior of the Banqueting House. The price, including envelopes, is 10s. a dozen.

Card B is a reproduction in colour of Garrison Gunners in a Portsmouth fort firing a salute during a review of the Fleet at Spithead, 1854; inside is the crest of the Institution. The price, including envelopes, is 16s. a dozen.

Postage in each case is 6d. for each dozen by ordinary mail.

Members are requested to ensure that the correct remittance, including postage, is sent with their orders. It is regretted that *orders cannot be executed until payment is made*.

THE LECTURE THEATRE
ROYAL UNITED SERVICE INSTITUTION

THE JOURNAL
of the
Royal United Service Institution

Vol. XCIX. AUGUST, 1954. No. 595.

AIR POWER AND THE FUTURE OF WAR

By Marshal of the Royal Air Force Sir John Slessor, G.C.B., D.S.O., M.C.

On Wednesday, 14th April, 1954, at 3 p.m.

Admiral Sir George Creasy, G.C.B., C.B.E., D.S.O., M.V.O., in the Chair

The Chairman: Our lecturer this afternoon is well known to many of us personally, but to every soul in this room he is known by his great reputation and by his magnificent record of service to the Country. Ladies and Gentlemen—Marshal of the Royal Air Force Sir John Slessor!

LECTURE

At the risk of being criticized as an unrealistic optimist, the first thing I would say about air power and the future of war is that the most important thing about air power is that, provided we are sensible and patient, its effect will be that war has no future—war, that is, in the sense of total world shooting war as we have known it twice in our generation. And I think it is necessary, in order to clear our minds on air power and the future of war, first to have a careful look at air power and the past of war. After all, in looking to the future we can only make an instructed guess. And our guess will be better instructed if it is based on some knowledge of the relevant facts of the past—knowledge which may also help us to avoid some of the strangely strong prejudices which this still relatively new conception—air power—still manages to arouse in some of the more conservative breasts. New ideas seldom have a very strong appeal to Englishmen; it is one of our strengths that we look at them critically and like to measure their validity by empirical tests. But that attitude has its dangers if it is overdone. And we should be able to think clearly and dispassionately about a subject which, in these days, is so much a matter of life or death to us, individually and nationally.

The first thing to remember is that the 1939–45 War was the first air war in history. We had some little experience of using aircraft in a purely auxiliary capacity in 1914–18; we had a good deal of experience of it in little tribal disturbances in the 20 years between the wars; and we had seen the beginnings of something more significant in Spain. But it is none the less broadly true that the 1939–45 War was the first air war, and before 1939 we really knew nothing about air warfare. You find that note often cropping up in the contemporary documents in the years before the war—Air Staff papers, briefs for ministers in the Committee of Imperial Defence, etc.—the reminder that we had no practical experience of air war between first-class Powers, and so were really guessing. As a matter of fact, looking back on it, I do not think we guessed too badly. Just suppose for a moment that the first man to put out in a boat had done so in a little wood and canvas canoe in 1903 (the year the first man made a controlled power-driven flight in an 'aeroplane'); that

the Royal Navy had had experience only of one great war, in which they had taken a not very important part using—say—old steam and sail ironclads of Crimean days; that between 1918 and 1939 they had had a few scuffles in Yangtse gun-boats with pirates in junks; and then, a few years before the late war, modern naval armament had begun to develop—nothing like as up to date as the armament of 1954, or even of 1943, but the early types of things like the submarine, the torpedo, asdic, 15-inch guns, and modern fire-control gadgets and so on. Now, if that had been the history of the Royal Navy by the outbreak of war in 1939, I wonder if our guesses about the influence of sea power on war would have been better, or as good, as our guesses about the influence of air power. I wonder even if the influence of sea power in the 1939–45 War would have been as significant as the influence of air power actually was?

There are still people who write to the papers and say that "the air marshals" or "air enthusiasts" (an air enthusiast, by the way, is an unbalanced individual who dares to suggest that aircraft may be rather important, whether in war or in commerce or communications)—people like this—before the war are supposed to have made all sorts of extravagant claims such as that air forces could win a war by themselves, could protect our shipping by bombing U-boat bases, and so on. Now, I am quite prepared to admit that there were people who overcalled their hands and talked a certain amount of nonsense. But the people who claimed too much for air power were hopelessly outnumbered by the people who talked even greater nonsense on the other side, who said that aircraft could never be the slightest use for anything except as pure auxiliaries to the Army or Navy—and not much use for that. To-day we are really United Services, so I don't mind asking you in the Royal United Service Institution to remember that every single advance in the use and status of air forces had to be fought through tooth and nail against the most powerful, the most determined, and, I am afraid sometimes, the most intemperate obstruction by the forces of military conservatism. That sort of thing is bound to lead to some overstatement sometimes. But these grossly extravagant claims of which the earlier "air exthusiasts" are still sometimes accused (and I am bound to say it is not very easy to find chapter and verse for them) were not made by really responsible people. You will not find these claims in the pre-war Operations Manual, which, after all, was the official expression of Air Staff policy. All we early R.A.F. officers were alleged to sit up late every night learning the works of General Douhet by heart. We may have had his book in the Staff College library, but, if so, I never saw it. I understand he made the mistake of being a bit ahead of his time. But when I was a student at a Staff College in 1924, we were not taught that the R.A.F. could win wars by itself, and when I was a teacher at a Staff College 10 years later, I certainly never taught that.

The idea that air power might become decisive in war did make its appearance in very early days—for instance in the sayings of no less a couple than General Smuts and Marshal Foch. That conception was always there in the background as a possibility for the future, and no doubt it influenced some people's thinking to some extent. One principle—a legacy of 1916 and 1917—which became an article of faith in the R.A.F. was the supremacy of the offensive in air war, the offensive as the soul of defence. That perfectly sound principle may sometimes have loomed a bit large and got our strategic thinking a bit out of focus; it certainly had an influence in leading us to underrate the value of the fighter in air defence in '37 and '38. We only put that one right in the last expansion plan before the war (Scheme "M" in the Winter of '38), just in time to give us the force that won the Battle of Britain nearly two

years later. But the soundness of the principle was proved up to the hilt and beyond all doubt in Hitler's war; you must have your fighters, and your radar chain, and your guns in adequate strength and efficiency, but the primary agent in that astonishing degree of air mastery that we enjoyed in all theatres from Alamein onwards was the bomber offensive.

Air power did indeed have a decisive effect in 1938. It was, above all, the "thug with the bomber force" as someone called him at the time, that caused our bloodless defeat at Munich. Now, we overrated the threat of air power at that time, with the aircraft and the weapons of that day. Remember again, the first air war did not break out till a year later. It is all very well to be wise after the event now, with all our after-knowledge from the German archives and the evidence at the Nuremberg trials. But I was Director of Plans at the time, and I do not believe anyone—not even Mr. Churchill—could have taken the responsibility of leading the nation into war in the appalling condition of air weakness in which we still were in September, 1938. It is no good talking now of what Mr. Chamberlain should or should not have done at Munich. He could have done nothing else then. What that Government can be blamed for is the weakness, the blindness, the misjudgments, the unwillingness to face the necessary rearmament bill—the wicked folly if you like—of the two years *before* Munich.

It is true that we did alarm ourselves and our political chiefs unduly in the years immediately before the war by visions of the "knock-out blow"—a phrase which made a pretty frequent appearance in the contemporary documents and discussions. But you must remember how it looked to us, in our inexperienced ignorance at the time, in 1938. The Germans had a very big bomber force and would not have had to worry about not being able to escort it, because in 1938 we had virtually nothing that could touch it; even our few Hurricanes could not then fight above 15,000 feet, and our A.A. defences were then hopelessly inadequate and ineffective. The best estimate we could make was that this Country would be open to a continuous scale of attack of about 400 tons a day. That may not sound much now, but cast your minds back, say, to the two London blitzes and the attacks on Liverpool in the Spring of 1941, which were on slightly more than that scale, and think of that happening in September, 1938, when we were virtually defenceless against it. In the light of hindsight we may hope that it would not have been decisive. But he would have been a pretty bold military adviser who assured the Government of the day that it certainly would not be.

It is also quite true that, anyway until about the end of 1938, we very much over-estimated what our own bombers of the day would be able to do, and underestimated the difficulties. We enormously underrated the number of bombs required to get a hit, the numbers and weight of bombs required to do fatal damage when we did get hits, the toughness and resilience of civilian morale under bombing, our ability to bomb unescorted by day—with no self-sealing tanks—the scientific and technical aids required, and all that sort of thing. I think we might have guessed better than we did, in spite of our inexperience. We had a whole lot of plans for air attack on various target systems in Germany—air, naval, army, industrial, electric-power, transportation, oil, etc., none of which really had the least chance of being effective with the aircraft and the weapons which could then be made available within the next two or three years. As a matter of fact, in the long term, when we had the right sort of heavy long-range bombers in the right numbers with the right sort of bombs and ancillary equipment, Oboe, H.2.s bomb-sights, and so on, air

power did in fact do just about what we had claimed for it. Where we went wrong in those pre-war days was not in our estimate of what air power could do when it had the tools, but in our estimate of the tools required to do the job. As war came nearer, we became increasingly worried about the inability of the then contemporary bombers to do the job, and in Scheme " M " we plumped for the all-heavy bomber force, and ordered off the drawing board the big four-engined heavies that were ultimately to tear the heart out of Germany by night along with the American heavies by day. The war in fact came three or four years too early for us, and it was not until 1943 that air power began to have the impact upon the enemy that we had foreseen for it.

One other point before we leave this background of air power and the past of war. As I have said, no responsible airman ever claimed that air forces could win a great war unaided. No one claims that now. But we do tend to overlook the fact that, in 1945, one of our major enemies, Japan, did capitulate, with her armies intact and before a single Allied soldier set foot on Japanese soil, primarily—not solely, but primarily—under the pressure of air power. And in that process carrier-borne air power played an indispensable part, by pushing forward U.S. air bases across the vast spaces of the Pacific to within decisive range, and destroying Japanese sea power.

As for the war against Germany, it is perhaps unprofitable now to speculate about whether we could have enforced Germany's surrender by air action if we had gone the right way about it. In point of fact we never tried to do it. We never dreamed early in the war of adopting that as a policy. After the fall of France, a combination of air action and economic pressure looked for a time like being the only way we could possibly defeat Germany, though I do not think anyone felt very sanguine about it. Even at Casablanca, when the great American heavy bomber force was beginning to build up alongside Bomber Command, the directive to the air forces did not lay down that they should bring about Germany's capitulation by air action. I had a certain amount to do with that Casablanca directive and, speaking for myself, I was by then sure that, though the armies would have to return to the Continent, we could ensure that they went back on a march-table instead of on an operation order, if we really concentrated our effort on that object. I am still convinced of that, though, of course, no one can ever prove it. But all sorts of pressures, military as well as political, which it would take too long to describe and most of which were in the circumstances unavoidable, built up to make it impossible ; and and not the least among them were the " unconditional surrender " policy and, later, the Morgenthau plan, which were certainly not unavoidable. So all I can do now is to state my conviction that, if we had been able to concentrate a rather higher proportion of the national resources of Britain and America on the bomber offensive against the heart of Germany—if we had been able to lay on a series of ' Hamburgs ' one after another in quick succession against the other major cities of Germany—we could have broken down German resistance before the armies had to be hurled against the Normandy beaches. Anyway, that is my bet and, though no doubt it is no better than yours, it is certainly just as good. And—please note—it does *not* mean anything so silly as a suggestion that the air forces could have " won the war alone."

I hope this necessarily compressed and over-simplified summary of the past will have anyway one effect on your minds, that when I go on to tell you what effect I think air power will have on the future of war, you will not jump up and say, " Oh, but you air enthusiasts said all that before the last war and you turned

out to be quite wrong." Actually we said nothing of the kind. And in what we did say, we turned out to be far more nearly right than anyone was entitled to expect, though it took us a good deal longer and took a good deal more effort to do it than we thought in the days of our inexperience before the first air war.

Now, my view of what has happened since 1939–45 is, briefly, nothing less than a revolution in human affairs, brought about by an instrument which has had the effect that total world shooting war as we have known it twice in our generation is no longer a means by which one Power or group of Powers can impose its will upon another. I am not saying that *all* war is a thing of the past—no such luck. Nor do I suggest that international relationships are going to be much easier, or the long road towards the " Parliament of man, the Federation of the world " that Tennyson foresaw much smoother in this second half of the XXth Century. On the contrary, I think in some ways it may well be rougher than in the past 50 years. I think there will almost certainly be other limited wars of the kind of which Korea was the prototype. Indeed, it seems to me that the very fact that the final arbitrament of total war is one to which no one will again resort as an act of policy may very well mean that our enemies will seek increasingly to achieve their aims by a series of limited aggressions that will impose a heavy strain politically and militarily upon our resources. I confess I cannot follow the curious statement in para. 12 of the Statement on Defence, 1954 (Comd. 9075), that the growth of the atomic air deterrent should make minor aggressions on the Korea model less likely. I see no inherent reason why, in itself, it should do anything of the kind ; in fact, if we place too much reliance on the atomic air deterrent for purposes for which it is unsuitable, the effect may be exactly the reverse. Some people (particularly, if I may say so, our American friends) are too apt to grasp at panaceas. Atomic air power cannot do everything. I am personally convinced that, unless we are fools enough to swallow the Soviet bait of atomic disarmament (and fortunately, in spite of some rather ill-considered statements on the subject on both sides of the Atlantic, that is in the highest degree improbable), Russia will not embark upon World War III of the popular conception. The West certainly will not force an aggressive or ' preventive ' war; if that was ever possible (which, in spite of some nonsensical talk, I do not believe it ever was), it is certainly even less so now that Russia has atomic capacity. That surely is a sufficiently massive achievement for atomic air power—to have rid the world of its major nightmare—without also crediting it with the capacity to solve all sorts of minor ills, including the unpleasantly expensive necessity of maintaining conventional forces.

Part of the price we must pay for this freedom from the really mortal threat is the virtual certainty that our enemy, having decided that he cannot overwhelm our defences by direct assault, will seek to turn or undermine them by other means, by infiltration, by exploiting rebellion, and opportunities like poverty and misgovernment in new and immature nations or the Arab-Israel tension, and by minor aggressions on the Korean model. And to meet that sort of thing we must retain also a sufficiency of the right kind of forces to deal by limited means with what will be—or should be—limited emergencies, without having to have recourse to the dreadful arbitrament of atomic or thermo-nuclear air power.

So do not let us imagine that we are going to derive great economic relief from this ' new look ' in strategy, into which the U.S. have followed the British lead. What we *are* going to get—in fact, have got—is a preventative of total war and a real security which was unattainable by any other means except at quite prohibitive cost.

I want to pursue that train of thought a little further because I think Mr. Dulles's statement of 12th January has had the effect (not altogether uncommon for Mr. Dulles's statements) of creating a rather widespread false impression, that United States' policy would be to meet on their own initiative any form of aggression with " massive retaliatory power " at the place of their own choosing ; to be more specific, that another minor aggression like that of June, 1950, would be countered by the atom bomb on Moscow or Peking. That is so obviously nonsense that I did not for a moment believe that Mr. Dulles meant anything of the kind. He said that local defences must be *reinforced* by massive retaliatory power, not *replaced* by it. The trouble maker, the infiltrator, the minor local aggressor (and, what is more, the men behind the scenes who really hold the strings in these puppet shows) now knows that if he goes too far, retribution swift and terrible awaits him. But it is politically naive to imagine that public opinion in the Western World would stand for instant atomic retaliation amounting to world war arising out of minor local aggressions wherever they may happen. It would not do so on its own. But statesmen have also to take into serious account the public opinion of others, such as some great Asian States who, while sharing our democratic ideals, do not take quite such a clear cut, black and white view of these issues as we do and who, in this diminished world, cannot safely be ignored. This is a context in which the Commonwealth can have a valuable influence, and the U.S. Government would be wise to take counsel of the Commonwealth rather more than they sometimes do.

Mr. Dulles has more recently explained in this connection that in using the words " of our own choosing " he meant not of the United States' own choosing, but that of the Free World; and that the U.S. would always consult their Allies before loosing the massive retaliatory power of atomic air power. This should have set some minds at rest, though as a matter of fact, especially after our experience in connection with Korea, there were never any real grounds for supposing that the U.S. would ever rush off and embark upon atomic war without consulting their Allies.

That there will be more of these minor aggressions I personally have little doubt ; and another time we may see Russian troops employed instead of only their proxies, as we did, for instance, in Azerbaijan some years ago. Such an affair may well face the West with an intensely difficult and critical decision as to where to draw the line, where an affair of outposts ceases to be such and becomes a mortal threat to a vital interest or principle. I think the really important thing there is to be quite clear about para. 1 of the appreciation—the object of our strategy in this cold war of the long haul. I suggest that this is, not only to contain militant Communism, but, by the gradual intensification of pressure in the economic and political and (where necessary) in the military field, to get it back within its own frontiers and keep it there—and to do it, if we possibly can, without allowing the local incident to blow up into all-out war. I believe that, if we keep that object in the forefront of our minds and pursue it with firmness, patience, and consistency, and if we are able and ready to use the necessary forces of an appropriate type to meet the limited use of force by the limited use of force, then it will be possible—and will unquestionably be desirable—to localize and isolate these affairs, as we did Korea. It will take a lot of patience.

The Communist enemy will always be at some advantage in these sort of tactics, partly because he can choose his time and place and partly because he can often act by proxy at relatively small cost to himself. We must be prepared (and what is at

least equally important, must make it unmistakably clear that we are prepared) to react by "massive retaliatory power" if and when the minor tactical episode threatens to develop into the mortal danger, when the alternative to major war is bloodless defeat on a vital issue. The function of atomic air power, in other words, will be the big stick in the background to keep these affairs from spreading. If we do that, and if we are able and willing to send the conventional fire brigade into action to smother a minor outbreak, then I am optimist enough to believe that before long the enemy will get fed up with it, and come round to the view that this sort of tactic has no future. Then we can look forward to the beginning of the restoration of sanity to a distracted world and the dawn of a real international rule of law.

"The price of liberty is eternal vigilance," and to endure this sort of thing, perhaps for a generation, will be a high test of democracy. But even a generation of this sort of thing (and it may not last that long) is better than the ghastly alternative of atomic Armageddon.

But I have jumped ahead of my subject and must go back a bit to explain very briefly my reasons for the belief that atomic air power has brought about what I have called a revolution in human affairs. To my mind it is utterly nonsensical to suggest, as some do, that the atomic, and still more the thermo-nuclear, bomb is just a bigger and better bomb, different only in degree but not in character from the block-buster of 1939–45. To me this is even less realistic than to say that a 15-inch howitzer is only a bigger and better sling. In my view, the introduction of the atomic and thermo-nuclear weapon into the armouries of the world has profoundly altered the whole complexion and dimension of the phenomenon that we have hitherto known as war. And I think it is merely silly to try and make out that another great war in an atomic age would remotely resemble anything we have known in the past. I am not going to attempt to develop that theme in full, it would take too long. So I will confine myself to sketching in a few headings of what perhaps I may describe as a modern strategic philosophy, in the hope of provoking discussion of any of them that may interest you.

1. The basic assumption is that, to my mind without any shadow of doubt, if it did come to total world war, the weapon of mass destruction (W.M.D.) would be used by both sides from the beginning. I am not talking here about these minor wars that I foresee, though I think we may well see the use of tactical atomic weapons in the battle-zone in such small wars. But that is not the point I want to make now. The really important thing to be clear about, to my mind, is that when we talk about using the W.M.D. in a strategic sense, what we really mean is "going to war." When people say to me," Oh, but democratic governments would never agree to using the W.M.D. in those circumstances," what they really mean (whether they know it or not) is "You'd never get democratic governments to *go to war* in those circumstances."

Incidentally, I hope there is no one to-day who imagines that there is any analogy here with gas, which both sides had but neither used last time.

2. So the picture you have to hold in your mind of the opening stages of another great war is not a slowly mounting crescendo of blitzes over a period of years, giving both sides time to get accustomed to it, to build up their active and passive defences, disperse their war industries, and attune their minds and way of life to endure it, in the astonishing way the Germans did last time; still less is it remotely like August, 1914, or September, 1939. It is a series of Quetta earthquakes, a rapid succession of Hamburg catastrophes all in the first month or two, and then some. Frankly, I

do not believe any nation is capable of putting up with that and retaining the ability to wage war. No doubt you have seen what the recent White Paper on Defence said about that; like all official Government documents, I think it cautiously understates the truth.

3. I admit at once that this terrible fate would fall upon us as well as our enemies. In fact, I believe we have at last reached the point, which men have thought before that they were reaching, when total war would amount virtually to mutual suicide. European and Russian civilization would slide back into a Dark Age which might cancel out centuries of human progress. On the other hand, while the two great antagonists—Russia and the West—are both terribly vulnerable, the West (including, of course, America), I believe, is much the less vulnerable of the two. I hope you do not attach too much importance to geopolitical talk about Heartlands; that was all very well in Mackinder's day, but the central position of Russia would, in my view, put her at a decisive disadvantage in a world air war.

Perhaps I should interject here that when I talk about air war I do not visualize only manned aircraft as we see them developing to-day. There is not the slightest doubt that the fighter and the long-range bomber will sooner or later be supplemented —and ultimately, perhaps, completely replaced—by the pilotless interceptor and the long-range controlled missile, the V3, 4, or 5 of 1960 or 1970.

4. We are getting now somewhere near the conclusion that total war is a thing of the past. I believe the great reason for encouragement and hope is that there is now a general recognition of what 'winning a war' really means in the second half of the XXth Century. It means creating world conditions more favourable for yourself than could have been possible if there had not been a war. If it is universally recognized, as I believe it is now, that there is not the slightest chance of anyone winning a war on that definition, then no one will take it on as an act of policy. What is more, I believe it means that no one will, so to speak, take a chance on pushing the other side to a point where it has no alternative but to resort to major war, though perhaps it may still not be inconceivable (though I think it very unlikely) that war may arise from miscalculation on this head.

5. For ages men have dreamed of abolishing war. History is littered with the debris of Leagues and Pacts and pious resolutions designed to that end. None of them was any use, or ever had a hope of being any use. What I believe at last has happened is that war has been abolished in the only possible way—it has abolished itself, now that the ultimate weapon of atomic and thermo-nuclear power is in the hands of the only two possible major belligerents. (For the moment I count China as being in the Soviet camp, though I do not personally believe she will remain there, if we play our cards properly.)

6. It will not have escaped you that this theory depends for its validity upon the assumption that there is no effective defence against modern air attack. I believe that to be the truth. I would not be so foolish as to deny that some scientific means of defence may become technically possible, even conceivably against the long-range ballistic rocket with the atomic war-head. I do not believe it will ever be economically practicable.

I am not saying that the bomber offensive of the future will get away with it without casualties; why should it do what no operation of war has ever done as far as I know? What I do say is that Baldwin's dictum "the bomber will always get through" would remain valid long enough for atomic and thermo-nuclear air power to become decisive.

7. It surely follows from this that the validity of this strategic policy does not depend on our having a bomber force vastly superior to that of Russia. By all means let us keep a numerical lead if we can without it costing too much ; and it certainly should be possible for us (and when I say 'us ' I mean Britain and America) to keep ahead in the scientific and technical field. But all we *must* have is a force big enough to do the job if that should become necessary. The real thing we must concentrate on is not vast numbers, but making quite sure that we can put our bombs where we want to, if and when we have to, and at not too prohibitive a cost. That means unremitting research and development directed to bombing aids and the defence of the manned bomber while it lasts and—most important—to the development of the long-range unmanned bomber.

8. I wish the kindly, well-meaning people who advocate the abolition of atomic weapons would realize what a disservice they do to the cause of peace. Why do they suppose the Communists constantly bang the drum of atomic disarmament ? Of course they do ; it would suit them down to the ground, with their hordes of expendable man-power and their thousands of excellent tanks. If atomic bombs really were abolished, the Red Army, the instrument through which they have enslaved the nations of Eastern Europe, would come into its own again and get on with the good work in the rest of Europe. It never has been and never will be any good trying to abolish any particular weapon of war ; what we have to abolish is war. So I am afraid it seems to me to be the climax of absurdity to clamour for the outlawry of the instrument through which war has abolished itself.

9. Finally, let us preserve a sense of proportion in these matters. The chap who tries to carry any argument to its ultimate logical conclusion is a public menace. For instance, no one in his right mind would suggest that we should have no air defences at all. We cannot afford to make it look too easy, we must not put temptation in the way of the other fellow, who may still cherish some illusions about his capacity to survive atomic attack. We cannot leave ourselves wide open.

Moreover, we cannot yet be absolutely certain that we have seen the end of total war. If it should come, I cannot see it lasting any length of time ; but we might have to face a period of what Sir Winston Churchill has called " broken backed " war.

It must be clear from what I have already said that I think we must retain a strong and efficient Regular army. Not only will the land forces, in my belief, be the primary arm in these other small wars, as they were in Korea, but we must have troops on the ground on the frontiers of freedom in Europe. We must have them there in cold war, to act as a fire brigade against infiltration and to smother minor outbreaks. And if hot war should come, they would be essential as a holding and delaying force. So the N.A.T.O. and German forces under the umbrella of S.H.A.P.E. are as essential as ever. Fortunately, unlike at sea and in the air, the scientific development of modern weapons has, I believe, meant a great accretion to the power of the defensive on land.

Last but not least, we cannot possibly afford to throw over-board our ability to take our share in affording a reasonable degree of protection to our seaborne imports, and to the supply lines of the N.A.T.O. forces in Europe. I think there are various ways in which we could reduce the vulnerability of that Achilles heel, at substantial economic advantage to ourselves. I am thinking of the proper development of the productivity of our own land (anyway overdue), a far-seeing stockpile policy, and,

perhaps most important in the long term, the development of nuclear power for commercial uses. Also, do not underrate the potentialities of air cargo carriage on a really large scale in emergency.

But there is not the slightest hope of our ever being independent of seaborne supply. I confess I cannot understand why the Russians are spending all this money and effort on a huge U-boat fleet, considering what they could do with the modern mine, and the atom bomb on the terminal ports. But there it is, and it has got to be reckoned with.

The proportion of our national resources allotted to the Navy has been pretty savagely cut, and I cannot help thinking they will have to streamline their make and shape to conform a bit more to the principle of first things first. To me, the order of priority seems to be, first of all, a means of dealing with the pressure mine; secondly, more and better surface anti-submarine escorts, in view of the serious reduction in the efficacy of aircraft against U-boats since 1944; thirdly, anti-aircraft cover for convoys at sea, which for some years to come means escort carriers; and lastly, in connection with the maritime affair, the dispersal of unloading facilities away from the main ports. That last surely should rank at least equal with rescue, evacuation, and the maintenance of the essential services and day to day administration of the Country under atomic attack in the list of priorities for Civil Defence.

DISCUSSION

THE CHAIRMAN: I hope that the lecturer will now be asked a series of questions, as he told you that he himself hopes, within the scope and terms of his lecture.

LIEUT.-GENERAL SIR GIFFARD MARTEL: We have had an extraordinarily interesting lecture. We have all enjoyed it tremendously.

I should like to add a slightly additional portion of the picture to what was said.

We all know that in war you use the minimum possible force for the defensive in order to keep the maximum possible for the offensive.

So far as the Russians are concerned, they have built up enormous military forces, but these are defensive forces. They are entirely for defence. The Russians have these forces because if they did not have them there, there would be revolts and rebellions in many parts of their empire, and they have had some serious ones already.

These forces could be used for an offensive against us, but, as the lecturer said, the Russians are not the least bit likely to do that. I know all the members in the present Politbureau—I have met all of them—and they are much too able to be drawn into a great military offensive through Germany and France. They will not do that for they would be bound to lose in the end.

With regard to the offensive, this is based entirely on non-military methods. They have concentrated on this side and put great effort into it. They have built up a gigantic organization for infiltration all over the world which is causing these very troublesome local troubles everywhere. This has been done by means of a non-military organization, and with that they have gained half the world in population and land. A general who could take half the world in population and land without a casualty would be looked upon as a very good general.

On our side, we have naturally been building up our defensive forces in case the Soviet should advance against us. But they are entirely defensive forces. The atom bombers are defensive forces. They are in reserve in case the enemy starts a war, which he will not do. Neither side will. The lecturer told us that.

That leaves the last point, the offensive on our side. We should quite clearly have a non-military offensive all planned out on our side comparable with what the Russians

have on their side. It could easily be done. I will not go into details now for it would take much too long, but we could build up non-military plans for a non-military offensive which could be just as effective as the tremendous machine which the Soviet has built up, with which they have conquered half the world.

I am sure that it is not the slightest use having meetings with the Russians, even high level meetings with their leaders, unless you have some cards in your hand. If we could say "We want peace. You have been doing this infiltration, ruining our Empire as fast as you can and overrunning half the world. We shall put into effect our non-military plans if you continue." That would be dreadful from the Russian point of view. The moment that you could show the Russians that you had made such plans, the Russians would see reason, and for the first time we should see the possibility of peace in the world.

THE LECTURER: General Martel agrees with me that the object must be to get militant Communism back behind its frontiers and keep it there. There is certainly a political aspect in that, which I have not tried to deal with. There is another side to it. If we are to carry out a successful political offensive, we have to organize ourselves properly for it. I suppose what passes for modern diplomacy is all right, but I sometimes long for the days of striped pants and discreet silences. I think that we are handicapping ourselves very unnecessarily, and would like to see a return to the old, sensible methods of diplomacy and an end to this so-called 'open' diplomacy of Press conferences and headlines and everything being published in the newspapers and radio at every step in the game.

MAJOR S. VINES: The lecturer said that one of his basic assumptions was that in a future world war both sides would use the atom or hydrogen bomb.

I should like to ask him whether he can give any further reasons for that assumption in view of the fact that the British Government have already stated that we shall not be the first to use the atom bomb. Surely, if that is so, all the advantages will be with the enemy if it were a war in which the atom bomb was not used. Therefore, the enemy would be unlikely to be the first to use it, and it might not be used at all.

THE LECTURER: I quite agree. I think it is a great pity that we ever said anything of the sort, but I do not think that it will matter very much if it comes to the point.

The question that we have to ask ourselves is: Is either side going to admit defeat when they have still got atom and hydrogen bombs in their armoury? There can be only one answer—that they will not. Therefore, is it the idea that we should wait until the other fellow uses it first or until we are at a hopeless disadvantage with our Allies overrun and the enemy on the channel coast? That seems to me to be a very sad look-out. I do not think that this is a simple and straightforward question. It would be one of the most complicated and terrible decisions that anyone could ever have to make. But if we are going to wage war on the principle of "Do not be beastly to the enemy; he may hit you back." we are really defeated in advance.

CAPTAIN F. M. G. TORRENS-SPENCE, R.N.: I should like to ask the lecturer to explain a little more his statement that he did not think it was necessary for us to have larger atomic bombing forces than the Russians.

It seems to me that we have to penetrate so much farther over defences which will no doubt include air-to-air guided missiles and ground-to-air guided missiles and other things. It seems to me that to compensate for that sort of disadvantage, including the much greater vulnerability of our targets—their positions are better known—we have to have a much stronger atomic bombing force than the Russians if we are to have any hope of not being obliterated before we make any impression on them.

THE LECTURER: Are you not thinking only of England?

CAPTAIN TORRENS-SPENCE, R.N.: Yes. When you said 'we' I thought you mean that.

THE LECTURER: By 'we' I mean the West. It does not make any sense talking about a 'national' strategy. The only thing to make any sense is the strategy of the N.A.T.O. and the West.

CAPTAIN TORRENS-SPENCE, R.N.: I am rather concerned about a tremendous weight of atomic superiority getting here in time.

THE LECTURER: Are you talking about the Russians?

CAPTAIN TORRENS-SPENCE, R.N.: I mean the weight of the American bombing air offensive which is going to get into positions where it is within range to deliver a really heavy attack.

THE LECTURER: I think you will find that it will be there all right.

THE CHAIRMAN: I do not think that your question, Captain Torrens-Spence, has been answered. Was not your question: If 'we' means 'us,' why no bigger than the enemy? Was that not your main question?

CAPTAIN TORRENS-SPENCE, R.N.: Yes.

THE LECTURER: Let me deal with that then. We fogged ourselves terribly before the war with a lot of talk about 'parity'. That was a very misleading yardstick. When I say 'we' nowadays, I always mean the United States and ourselves. I have said that we must have a bomber force big enough to do the job. It may have to be bigger than that of the Russians; it may not have to be as big. It has very little to do with the size of the Russian striking force. It has to be big enough to do the job, and do it in the necessary time.

On your point about the Russians being much more inaccessible, that does not apply when you take the whole western Alliance, including the United States, into account. Russia is far more vulnerable than the United States. Because of her central position where she can be attacked from all the way round, Russia is more vulnerable than the free world.

MAJOR A. S. RAILTON: I visualize from this lecture that what we require is a large up-to-date atomic force which will never be used over a great number of years. Has anyone in history ever discovered how to keep a military force smart and on its toes when it is never used?

THE LECTURER: That is one of the discoveries that we have got to make. As a matter of fact, the United States Strategic Air Force is one of the most marvellously ready and fit forces that I have ever had anything to do with. I do not say that I think it will be easy always to have everybody on their toes, but the Royal Navy always managed to be pretty well on their toes in the 100 years before 1914. I do not really see any reason why the bomber force should not be the same.

LIEUT.-COLONEL W. W. WHITNALL: Do you think that there is any possibility of a full-scale hot war developing making use of all weapons short of the atom or hydrogen bomb, in the same way as in the last war we had a full-scale war but with gas and chemical warfare held in reserve and never used?

THE LECTURER: I do not think so. I may be wrong, but I do not think that there is any analogy with gas.

Apart from the Geneva Protocol—these things do not count when you have your backs to the wall—one of the reasons why we did not use gas last time was that it was not as effective a weapen as H.E. and fire, and by the time the Germans had got a really dangerous gas, to which we had not got an antidote, we had complete air superiority over Germany, and they would obviously have been absolutely crazy to use it. That is why gas was not used. I do not think that the two things are analogous at all. I may be wrong about this, but my view is that the instantaneously cataclysmic effect, particularly of the thermo-nuclear weapon, puts it into a completely different category from gas. There is no antidote to it.

ADMIRAL OF THE FLEET SIR ARTHUR POWER: I believe that in the foreseeable future the hideous flying machines which the scientists produce will be incapable of being controlled by the human being, and as the lecturer said—he did not use these words but I think he meant this—the aircraft will become a weapon and not a vehicle.

That is, I think, an indication that the ranges of these missiles which will carry the atomic heads will be comparatively short compared with the striking range of the modern aircraft as we know it.

That rather limits the size of the battlefield. By battlefield I mean the campaign area.

I think that one of the most important things—the lecturer put it fourth—is dispersal in the terminal areas. I think that there are only about 16 major ports in the United Kingdom which could be used to-day on the outbreak of a war. We are a very small country.

The lecturer says, "Not only the United Kingdom; it is the whole of the West."

If I am right in believing that the aircraft will become a weapon and not a vehicle and will be controlled by man on his 10 toes and not by a man flying in the air, then we get a far more localized battlefield.

Therefore, I believe dispersal in the terminal areas to be of major importance. This is bound to be a long-term policy, and it will be very expensive indeed. Somewhere or other we have to have alternatives for our vital terminal areas. It is not a bit of good bringing a convoy safely across thousands of miles of sea for it to reach its terminal port and find the blessed place in flames. We have to have alternatives or a means of defence over the terminal port. I do not believe that you can get sufficient defence over any terminal area to make it secure, and therefore I believe that you have got to have alternatives. The atom bomb makes dispersion absolutely essential as a measure of defence.

THE LECTURER: I think all of us agree with that. The only point that I would make is that I think it is perhaps unsafe to assume that before very long the range of the long-range controlled missile will be as limited as Sir Arthur Power suggests. I think that things move so fast that a good many of us in this room will live to see the long-range controlled missile, the two-stage rocket or whatever you call it, with a range equivalent to that of the modern strategic bomber with a reasonable accuracy, not a pin-point accuracy but an accuracy at the other end which is probably enough to hit a city. I may be wrong, but that is my own belief.

GROUP CAPTAIN A. F. BRITTON: In Korea, nothing larger than a B-29 or a B-50 was used. In Indo-China, only things like B-26s are being used. Do you believe that when bigger and better bombers, using conventional weapons, are available to intervene in minor wars it will make any significant difference to the outcome of such wars?

THE LECTURER: It is anybody's bet. My own feeling is that for that sort of war the land forces will really still remain the primary arm, with air cover and support. I think that you may quite well use the tactical atomic weapon on the battlefield. I think that we must not get wrong views about this. That is quite different from letting loose atomic air power as such, the terrible power of atomic and nuclear air power. But after all, if you are up against a situation like that in Korea, there does not seem to be any particular reason why you should not use one atomic shell to do what, say, 20,000 ordinary shells can do. But there again, that is where you get into the fringe area between whether you are going to spread it into the big thing or not.

In Korea, you had an extraordinary situation which puzzled a great many people. They could not understand it. We had air superiority and the other fellow had no air at all except the defensive fighter on the Yalu, but the Communists were able to carry on and keep supplying their troops in the forward line. As to the reason for that, it was not the least bit of a surprise to me. Any of us who have had anything to do with land-air

warfare know that the air cannot really isolate the battlefield, an expression which I think, to my shame, I invented in 1935. The point is that you cannot ' isolate the battlefield ' unless the armies are fighting. If an army is really fighting and expending ammunition, fuel, etc., then by putting a strangle down on the communications you can prevent them getting enough of the stuff which they must expend if they are to go on fighting. But if, as in Korea, they sit for months on end without fighting at all and slowly piling up reserves, the air will not prevent a tough enemy from being able to continue to put up a resistance.

That raises one of the problems we shall be up against in these minor wars, and I think it sets a great problem for the soldier. We shall be up against an enemy, whether he is a Russian or one of the Russians' proxies, who can live and fight a great deal more toughly than we can. If you are fighting an enemy whose troops are quite prepared to live on a couple of grains of rice a day and do not worry about all the necessities of life like Ensa shows, cigarettes, coca-cola and doughnuts, which seem to be considered essentials for modern civilized armies, then you are at a disadvantage.

The soldiers have a great problem in training troops to fight and live tough. By all means let us use all these things and give the men coca-cola and doughnuts when we can, but let us train them to fight without coca-cola and doughnuts when they have to. The people whom they will have to fight in the future are people who fight on a very much more austere basis than they do.

THE CHAIRMAN: Might I remind you that questions and comments are not limited to members of the R.U.S.I. If any of our visitors have any questions to ask or comments to make, I hope they will do so.

CAPTAIN TORRENS-SPENCE, R.N.: In discussing the defence of shipping, the lecturer put surface anti-submarine escorts as a higher priority than air defence.

I should like to ask whether, in making that assessment, the lecturer took into account the aid given to submarines by air reconnaissance. I do not know what the exact figure is, but I reckon that the submarine with air reconnaissance will do five or perhaps ro times as much damage as a submarine deprived of its air reconnaissance.

THE LECTURER: I quite agree with you. It is a tremendous asset. On the other hand, I want to see the surface escort to deal with the submarine when the air reconnaissance has put it in contact. There are some other things which we must develop as hard as we can—for instance—I hope we are doing all we can to find a defence against the torpedo. The answer to the whole problem might well be a defence against the torpedo rather than a defence against the submarine.

With regard to air escort for the convoys, we must not draw false lessons from last time. Last time, the air threat to convoys ceased to be very serious after about the end of 1941. We never really worried about it very much after then. But it would be unsafe to assume that if there was another war we should not have to worry like the devil about air attack on convoys. As long as you have that situation, whatever one may think about the pros and cons of carrier as against shore-based aircraft from an anti-U-boat point of view, the one thing that the shore-based aircraft cannot do is give air cover to convoys. Until you get an aircraft which will take off and land vertically, you have to have carriers to secure your convoys against air attack.

THE CHAIRMAN: I think that it was more the air reconnaissance to the U-boats than the air attack on convoys that the questioner was worrying about, but your answer really applies to both.

LIEUT.-GENERAL SIR GIFFARD MARTEL: There is a small point which I wish to raise. The lecturer, in reply to my remarks earlier, said that I agreed with the idea that we have to contain the Communists. That was not what I meant at all. I did not mean that for a moment. There is not the slightest use in containing them.

THE LECTURER: I did not say that. I said that we had not only to contain them but to get them back behind their frontiers and keep them there.

LIEUT.-GENERAL SIR GIFFARD MARTEL: We have to go further than that. We have to stop them issuing this poisonous and evil creed all over the world and conquering the world, which is their intention. The only way to win a campaign is by the offensive, and we have to bring pressure to bear on them. The Politbureau has only about one-third of the nation behind it. We have to bring such pressure to bear on them that they will stop spreading their evil creed. That is the only way that peace can be established. No one has produced a comprehensive plan to bring the necessary pressure to bear on them, which is the only way to win a war. I produced one three years ago which was said to be no good, then let us have another one.

THE CHAIRMAN: What you suggested was a non-military offensive. That was your actual phrase, was it not?

LIEUT.-GENERAL SIR GIFFARD MARTEL: It was.

COLONEL F. H. SMITH: Have you considered the plans approved by Major-General Pope, Director Armoured Fighting Vehicles, for the rapid loading and discharging of vessels—on the self-loading and self-discharging design—at the end of the last War? It always seems to me that there is not enough liaison between the naval constructors and the military and air experts. It must be disappointing for sea transport commanders who struggle through seas of minefields snd submarines on perhaps a five-day voyage to find that it takes five weeks in port to discharge and load when the process can be carried out in as many hours with self-discharging and self-loading vessels.

Looking at the Mercator map behind you, you see that the land area of Greenland is shown larger than the whole of South America when really it is only one-fifth, bearing in mind Mackinder's projection wherein 94 per cent. of the population of the world is in the principal hemisphere which takes London (approximately) as its centre. In that hemisphere we have also 98 per cent. of the world's industries. It always appears to me that our children are brought up on entirely erroneous conceptions.

THE LECTURER: I agree with you—Mercator is a very misleading chap. I do not know whether anybody in the hall knows about the self-unloading ship.

THE CHAIRMAN: I am afraid that you have me a little out of my depth on self-discharging and self-loading vessels. These matters are very much under review at the present time. I cannot give you details. Probably I should not be allowed to do so even if I could do so.

COLONEL F. H. SMITH: I refer you to the plans at the Admiralty prepared by the late staff of the D.D.S.T-T. to the requirements of the D.D.A.F.V. at the War Office.

THE CHAIRMAN: We have had, as we all expected to have, an extraordinarily interesting lecture.

Sitting here and listening to it, I could not help thinking of two things. One was the fact that our great-grandfathers used to settle any of their major differences of opinion by meeting on Putney Heath or Wimbledon Common or somewhere else and trying to blow each other's brains out with a pair of pistols. I would remind you that duelling became very unpopular and finally disappeared altogether about the beginning of the last century. I have often wondered whether that was due to the high moral atmosphere growing among our great-grandfathers or whether it was due to the increasing deadly accuracy of the pistol. I suggest to you that the latter may well have had quite a lot to do with it. That thought was very much in my mind as the lecturer evolved his point.

The other thing which came to me was the story of Kipling's in which he talks about the laws of common funk. It seemed to me that what the lecturer was telling us was that the law of common funk was going to keep the third world war at bay, that we were going to have little affairs on our outposts in which he was gracious enough to allow the

Army and the Navy to play a large part, but that the major war of the type that we have known twice in our lifetime was going to be kept at bay. I think that that is a very comforting thought to take away with us from this room this afternoon.

Perhaps I might just touch on one or two points which have arisen and have been left unanswered.

I am sorry that I was a little ignorant on the subject of self-discharging and self-loading vessels, but it seems to me that we can find out more about that subject from the War Office.

I think that the point raised about equality of air power that the lecturer touched on is affected to some extent by the saturation effects of the atom bomb and the thermo-nuclear bomb. In other words, to some extent such bombing is subject to the law of diminishing returns. I think that that partly answers the point that Captain Torrens-Spence raised.

Those are all the comments that I wish to make. They are very brief and very few.

I am sure that I am speaking on your behalf in thanking the lecturer, a busy man, for coming here this afternoon and giving us this very reassuring lecture and sending us away with our hearts a little more cheerful perhaps than when we first sat down in our chairs. On your behalf I thank Marshal of the Royal Air Force Sir John Slessor very much indeed, and I hope that you will show your appreciation in the usual way.

(*Applause.*

ADMIRAL OF THE FLEET SIR ARTHUR POWER: It gives me pleasure to express our thanks to our Chairman, Admiral Sir George Creasy, who, judging by what he has said about our lecturer, may be regarded temporarily as an idle man, or we should not have had him here today. Thank you very much, Sir George, for taking the Chair. (*Applause.*)

HISTORICAL SURVEY OF TRADE DEFENCE SINCE 1914

By Rear-Admiral R. M. Bellairs, C.B., C.M.G.

On Wednesday, 3rd March, 1954, at 3 p.m.

Admiral Sir Henry Moore, G.C.B., C.V.O., D.S.O., in the Chair

The Chairman: I think that most people here know about Rear-Admiral Bellairs, who will talk to us this afternoon about the historical survey of trade defence.

Rear-Admiral Bellairs has probably given as much time to planning and thinking about these sort of questions as anybody in the Service. He happens to be one of the very small band who were selected to go to a war staff course before the 1914–18 War, the only one of this type of course that ever happened, and it was really the beginning of the naval staff as it is to-day. He is now the head of the Historical Section at the Admiralty and is therefore in a good position to be able to survey the shortcomings and the successes that we had during the two wars. We did have some success, otherwise we probably should not be sitting here happily this afternoon!

I shall now ask Rear-Admiral Bellairs if he will give us his lecture.

LECTURE

IN 1539, 400 years before the 1939–45 War, Richard Morysine dedicated to King Henry VIII the first book printed in England on the study of war. "It can hurt no man," he wrote, "to see those things practised by ancient captains which may give good occasions both warily to invent new policies and wisely to use the old . . .," and "to hear howe wit with small force, oft times worketh wonders, where exceeding great strength cannot avail . . ."

Wars are fought, in the initial stages at least, with forces provided and disposed in accordance with general principles or what might be termed the philosophy of war evolved in the preceding period of peace.

What general principles conditioned our trade defence measures on the outbreak of the 1914–18 War, and again on the outbreak of the 1939–45 War? And how were they modified, if they were modified, to meet the realities of trade defence in war?

Trade defence is an amorphous phrase. To be precise it means the defence of the merchant ships carrying the supplies which enable us to wage war. Its importance is such that if we fail here *all* else fails.

Defence of Maritime Trade before 1815

Let me start with a backward glance at the problem of shipping defence prior to the long era of peace that followed the overthrow of Napoleon in 1815. This Country had by then been waging warfare on a world-wide scale for over two centuries and had established general rules for the successful conduct of maritime operations in defence of shipping, which can be summarized as follows:—

First, that the control of shipping by the Government lay at the core of successful shipping defence; in other words, that Admiralty control of the sailing and routeing of merchant ships was a prerequisite to the successful defence of shipping.

Secondly, that the degree of control necessary to ensure the safety of ships exposed to risk of capture, or destruction, required continuous naval supervision in the form of convoy.

Thirdly, that when our naval forces were organized and operated on the

basis of mercantile convoy, then they could be deployed so as to combine the greatest economy of force with the greatest power of *offence* as well as the greatest power of *defence* against enemy forces endeavouring to attack merchant ships at sea.

War experience had shown that departure from these rules invariably endangered the "Safety of the Dominions and the Security of the Trade."

Deployment of our naval forces for trade defence took the form of:—

(1) Escort forces—warships sent to the convoy assembly ports to escort merchant ships assembled for passage in company to their various destinations.

(2) Support forces—single 'cruisers,' squadrons, or even fleets sent to cruise in particularly dangerous waters to be traversed by convoys in order to afford the convoys additional protection during this part of their passage.

(3) Blockade forces—warships disposed from time to time off enemy ports and bases with the object of keeping watch on the enemy's main forces, of rendering hazardous the passage to and from enemy ports and bases of enemy war—and merchant—ships, and of controlling neutral trade with enemy ports by ensuring that under cover of the neutral flag the enemy did not receive contraband. Contraband was defined by the Solicitor-General in 1801 as "all articles designed for, and contributive to, the advantage of the enemy."

So long as enemy forces were successfully attacking convoys, provision of escort and support forces took precedence over that of blockade forces. This was because in every war, despite unremitting enthusiasm and effort and assisted by every technical aid, blockading forces repeatedly failed:—

(*a*) to bring the enemy forces to decisive action;

(*b*) to prevent the egress of, and subsequent ingress of, enemy raiders;

and (*c*) to achieve by contraband control more than a long-term effect upon the enemy economy and warship building programme.

On the other hand, convoy escort and support forces consistently brought enemy forces to decisive action; prevented them from inflicting serious losses upon shipping; and thus contributed to the reduction of the enemy's naval strength and the building up of our own.

Finally, a war risks insurance scheme was recognized as a prerequisite to the successful operation of shipping control and of shipping defence. This was because in the absence of such a scheme the financial risks in war were too great to justify owners sailing their ships and shippers to load cargoes.

The private enterprise marine insurance market underwrote war risks. It was able to do so partly because, the ships being small and numerous, the risk was well spread and partly because by long experience it could closely estimate, and in the course of a war calculate, the war risks. It applied premiums on a differential basis according to the voyage to be undertaken and the degree of protection to be afforded and made use of, assessed on the basis of convoy.

This was sound economic practice, for generations of underwriters had found to their profit, and the Country's, that ships sailed in, and which remained in, convoy were a better risk than ships sailed independently, or which broke convoy to complete their voyage independently. These latter were currently termed 'runners.' For 'runners,' the war risks premium for any given voyage was up to 50 per cent. greater than for convoyed ships. Frequently it was at the penal rate of 50 per cent.

of the value of the cargo. Nowadays, marine insurance is not associated by many people with maritime policy. In those centuries it was.

By proving statistically to the statesmen and the Admiralty, through their profit and loss accounts, that convoy afforded the best method of shipping defence, the underwriters both helped to shape and helped to enforce naval policy. Being financially interested in the safety of shipping they saw to it, either by direct representation to the Admiralty or by Parliamentary pressure, that the Government provided the ships and the Admiralty ran the convoys in sufficient numbers at suitable times. It was largely through their agency that the Government, in 1793, finally made convoy compulsory.

The enemy, for their part, found during these centuries that minor war vessels and privateers were able continually to evade blockading forces; that they were the most effective craft for waging the main attack upon shipping; that 'runners' were their most rewarding prey; that it was always dangerous, and generally unrewarding, to attack convoys; and that when, owing to the efficacy of the convoy system, it became essential to attempt to attack convoys in order to capture merchant ships, the raiding forces had to operate in packs, a system of attack initiated by the Elizabethans, in attempts, repeatedly frustrated, to attack the Spanish trans-Atlantic convoys, and used in the XVIIth and XVIIIth Centuries by the French in attacks upon our trans-Atlantic convoys.

Trade Defence Policy, 1815 to 1914

Now let me turn to the era prior to the 1914–18 War. In the hundred years which elapsed between the end of the Napoleonic wars and the outbreak of the 1914–18 War, this Country experienced industrial, commercial, and technical revolutions and a revolution in economic thought. From the XIVth to the XVIIIth Century the Government had pursued a protectionist policy epitomized by the series of Navigation Acts passed to encourage the development of English shipping for the sake of defence and, later, of colonial development and commerce. In the XIXth Century, the economic policy developed and put into force was the reverse, namely, that of free-trade and of *laissez-faire*. The throwing open of the British carrying trade to foreign shipping, by the abolition, between 1822 and 1854, of the Navigation Acts, and the abolition in 1872 of the Compulsory Convoy Act, marked the completion of the revolution. *Laissez-faire* had come to stay in time of peace and, it was confidently believed, in war. Henceforth, it dominated our trade defence deliberations and influenced the structure of the Navy.

From the 1850s, to an ever increasing extent, the ships became bigger, were built of iron or steel, and were propelled by steam. Their predictability of movement led to the holding in the Country of the economic minimum of raw materials and food. Consequently, the continuance unchanged of the Country's economy depended upon the continuance of customary shipping movements. Moreover, although British shipping carried about half the world's trade, foreign shipping was now participating in the British overseas carrying trade. If, in war, restrictions were placed upon British shipping, it was feared neutral ships would take over the world's carrying trade and at the same time be less willing to serve this Country. Thus, by the last quarter of the XIXth Century, when trade defence was receiving consideration, no interference with the peace-time movements of our shipping was considered economically desirable, even in the event of war.

As early as 1881, a distinguished naval officer, Captain, afterwards Admiral, Colomb, had epitomized this view in a lecture at this Institution on the protection of commerce in war. " The carrying trade to be protected," he declared," is . . . for individual peaceful objects " which " defy the control of war policies and war ministers, for they are only attainable by obedience to the eternal laws of supply and demand," and he ridiculed those who advocated convoy for merchant shipping in war, saying that the Admiralty's task was to defend what he called " the Imperial sea roads," and that to interfere with shipping in order to run convoys would be tantamount to an admission of defeat rendering invasion of the Country unnecessary for its subjugation. He voiced the official view, first formulated seven years before. Henceforward, official and unofficial appreciations of the problem of trade defence, instead of discussing it in terms of ships and voyage frequency, discussed it in terms of the defence of shipping routes.

Thus it came to be accepted that by attempting to defend the routes customarily followed by shipping in peace, the Navy would be able in war to leave shipping free to trade as usual for ' individual peaceful objects.' The appreciations derived an air of reality from the practice of delineating the routes upon accompanying charts as immutable continuous lines, and, where they converged or crossed, as fixed areas.

Thus, when war threatened between England and Russia in 1885, a special Admiralty Committee reported on "The Protection of Commerce by Patrolling the Ocean Highways and by Convoy." Taking the first trade defence paper of 1874 as a basis, it concluded that trade defence should be effected by a system of blockade of enemy warships in port, of patrolling areas where routes crossed or converged, and what it termed "the highways" connecting them, coupled with hunting enemy warships at sea.

The Committee dealt with the question of convoy by stating its disadvantages under peace-time conditions and none of its advantages in war, and concluded that its institution would result in the carrying trade passing to neutral bottoms. These views effected subsequent warship design when, in 1889, a great naval reconstruction and expansion programme was initiated. Thereafter, the ships were designed for close blockade work and for patrol work based upon a network of fixed defended coaling stations, adjacent to the patrol and blockade areas.

Further examinations of the problem of trade defence in the 1890s and 1900s to meet the changing international scene all ruled convoy out as a practical measure, primarily on the grounds that the Navy's task was to maintain shipping movements as in peace-time. Thus, the revolution in economic thought since 1815 had imposed a revolution in naval thought. The object was no longer to protect the *ships* plying the routes, but to protect the *routes* plied by the ships. The keystone of the system of trade defence intended to effect this was blockade, to which patrol was ancillary.

A battle was expected to be fought soon, the war to be quickly over. This was because in the last half century weapon development, and land as well as sea transport, had given armies and navies such powers of destruction and movement that statesmen and professional students of war had become convinced that a war would be settled by professional forces in a matter of weeks, or at most months. It followed from this reasoning that the Government should not interfere with the normal course of trade since the war would be so short that more harm than good would result. Thus the policy of ' blockade ' and ' patrol 'met the statesmen's war-time requirement of ' business as usual,' a phrase which incidentally was still current in 1916. Almost as a corollary to this ' business as usual ' in war-time, British statesmen in the years

before the 1914–18 War were advocating the abolition, or at least the severe restriction, of contraband, with the idea of limiting the effects of war upon peace-time civilian economies. The Declaration of Paris of 1856 and the Declaration of London of 1909 represented successive inroads on the definition of contraband given by the Solicitor-General in 1801.

Blockade and patrol of routes in defence of trade led to a vocabulary which discussed trade defence in terms of 'sea roads,' 'ocean highways,' 'sea lines of communication,' and 'sea communications'—all abstractions. To attack and defend ships is intelligible, to attack and defend routes when the wastes of the sea are pathless is unintelligible. Nevertheless the enemy's aim came to be described as 'to attack and sever our sea lines of communication.' Even to-day, after the experience of two wars, our object in trade defence is often stated to be the defence of our 'sea communications.' Thus, in a recent article on sea warfare and trade defence the object was defined as, "to secure the *sea communications* . . . . from destruction"; the submarine was described as the "greatest threat to the Atlantic convoy *routes*," and "The sea *area*," it was stated, "would in war, be open to almost every method of attack by an enemy," no doubt as the desert was to the Afrika Korps.

The 1914–18 War was to show the impossibility of fighting a world-wide war and of maintaining 'business as usual.' Eventually, to win the war, every form of economic control and rationing had to be adopted. But the need for this was only slowly learned during the first three years. It was a State war risks insurance scheme which, as much as anything, contributed to the slowness. In 1913, the Government realized that a war risks insurance scheme for shipping was essential if, in war, shipping was to continue to sail and cargoes to be shipped. On 4th August, 1914, the State War Risks Insurance Scheme was promulgated. There had been no world-wide wars for 100 years, so that the insurance market had no modern statistics on which to assess war premiums. Moreover, ships and cargoes were now individually so costly that it felt unable to underwrite British shipping and cargoes against war risks. The State insurance scheme re-insured all cargoes destined for the United Kingdom, and 80 per cent. of the insured value of the hulls of British ships, provided the ships insured complied with the Admiralty's sailing instructions. Admirable in intent, it contravened sound insurance practice by substituting a nominal and flat-rate premium for the differential premiums assessed on voyage risk and whether ships sailed under escort or as 'runners.' It thus relieved the insurance market of keeping an actuarial check upon the system of shipping defence which was operated. Clearly the safeguard lay in the Admiralty maintaining statistics which would show the relative risk of sailing ships under escort, as transports and supply ships always were, and independently, and consequently which system was the better. But the Admiralty did not maintain such statistics. They were nobody's business and though the War Risks Insurance Scheme kept shipping moving, there was no economic check upon the system of shipping defence employed. The State scheme short-circuited the warning system previously operated in war by the underwriters.

Trade Defence in the 1914–18 War

And how ran the course of shipping defence during the war? Certainly not according to pre-war expectations. Before hostilities began, peace-time shipping movements were violently disrupted on a world-wide scale by fear of war, and they never returned to normal. During August, 1914, shipping movements in the outer oceans almost ceased for fear of the few enemy cruisers at large. Then the war risks

insurance began to take effect and shipping revived. But in the remaining months of 1914, entrances into U.K. ports of ships in the foreign trade dropped by 30 per cent. and clearances by 42 per cent. as compared with 1913. As the war progressed, despite the elimination of the enemy cruisers, these reductions grew steadily greater. At the same time precautionary routeing, sailing delays, and diversions caused grave port congestion and resulted in the delivery rate of shipping being reduced by not less than 20 per cent. The decline in entrances and clearances continued in 1915 and later years, due primarily to the severe attack on our trade waged by Germany with mine and submarine.

The Germans reacted in February, 1915, to the British blockade and war zones declared in 1914 by declaring similar war zones so as to enforce a counter-blockade with mines and U-boats, shipping being warned that passage through these zones rendered it liable to being sunk.

On our part, consistent attempts were made to enforce a blockade of the enemy minelayer and U-boat bases by bombing; by mining their approaches; and by patrolling the U-boat transit areas with submarine, surface vessel, and air patrols which we steadily increased in numbers. Merchant shipping continued to move independently.

To reduce the area to be swept, war channels were established for shipping, whilst to reduce the sea area to be guarded, what were termed 'patrolled lanes' were established in coastal waters. In the Western Approaches, evasive routeing was developed, patrols being maintained on frequently changed 'approach routes.' U-boats, however, quickly found out from this which route was in force, and thus where ships were to be found.

Shipping in port was stayed from sailing whenever the presence of a new minefield or a U-boat was suspected, until what was termed a 'safe route' had been issued. Increasing numbers of merchant ships were armed, and, from 1915, Q-ships, to surprise the enemy into fatal action, and a chain of wireless direction-finding stations to guide surface and air hunting forces on to U-boats were added to the armoury. By the end of 1916, we had hundreds of surface craft, 70 airships, and numbers of flying-boats and seaplanes in operation. Over 22,000 mines had been laid off enemy bases.

Notwithstanding all this, U-boats by the end of 1916 had sunk over 1,660 ships—300 of them by mines—in home waters and the Mediterranean, the majority in home waters. In the closing months of 1916, when the tempo of the enemy attack increased with the growth of his U-boat fleet, losses averaged 150 ships a month, 120 of them on the average in inshore waters. U-boat warning delays amounted to a 30–40 per cent. blockade of many trades, increased port congestion, and still further reduced the delivery rate of shipping.

I have just explained that there was no lack of anti-submarine precautions; but what of anti-submarine forces? Of these there were the hundreds of surface craft, 70 airships, and numbers of flying-boat and seaplane squadrons in service by the end of 1916; the enemy bases were constantly being mined, but the mining patrols did little to save ships or sink U-boats. For instance—and the incident is typical—for a week in September, 1916, three U-boats operated in the Channel in an area watched by 572 anti-submarine vessels and, though continuously hunted, sank 30 ships and escaped unscathed. Indeed, on the average since the start of the war, only one U-boat was being destroyed per month. Germany, who had started the war with 28 U-boats, had over 100 operational.

On 1st February, 1917, with a now rapidly expanding U-boat fleet, Germany began to enforce her counter-blockade by waging unrestricted warfare—sinking at sight any vessel encountered in the war zones. Within three months over 800 ships, totalling nearly 2,000,000 tons, had been sunk. Our counter-measures were to intensify the existing methods. But by April, one ship out of every four sailed overseas was failing to return, and neutral shipping was refusing to serve the United Kingdom trades. In this crisis the minority opinion in favour of convoy at length got a hearing, and at the end of April, despite opposition which is fully described in the official histories of the 1914–18 War, the Government ordered convoy to be instituted. The system was developed slowly. Regular homeward ocean convoys were started in July, outward in August, Mediterranean convoys in November, but in home waters the system was not comprehensive until October, 1918.

The convoy system was not everywhere taken to kindly. In the Mediterranean, in November, 1917, it was conceived that " the true solution was to be found in an increased and increasing offensive, which should in time enable us to dispense with the convoys and these methods of defence." Accordingly, the policy was pursued of attempting to blockade the U-boat bases—which were all in the Adriatic—by a barrage of fixed and mobile defences across the Strait of Otranto. To this end convoy escorts and supports were cut to a minimum, usually one sloop and two trawlers for up to 30 ships. Yet they kept the convoy loss rate below one per cent. and destroyed eight out of 12 of the U-boats sunk in the Mediterranean from 1917. On the other hand, despite its minefields, anti-submarine nets, 300-odd warships, squadrons of aircraft, flotillas of submarines, and the bombing of the U-boat bases, the Otranto barrage offensive failed to prevent the regular passage of U-boats between their bases and the Mediterranean. It sank one U-boat.

By October, 1917, the ocean convoy system had forced the U-boats to abandon the Western Approaches. They came inshore to the Irish Sea and Channel. Here, except for the cross-Channel French coal trade, which since February had sailed in convoy with negligible losses, shipping continued to be sailed independently along ' patrolled lanes ' and to suffer heavy losses. The main anti-submarine effort continued to be devoted to patrol and blockade. At the end of 1917, a vast northern mine barrage between Norway and the Orkneys was approved and, with the enthusiastic support of the United States, over 70,000 mines were laid in an attempt to contain or to destroy U-boats. U-boat passages were unaffected, except for the possible loss of one. It proved impracticable effectively to patrol any stretch of the 250-mile barrage, even though convoy escort forces were reduced to provide additional patrols.

Concurrently, a Dover Strait barrage was commenced in November, 1917, to deny to the Flanders-based U-boats direct access to the English Channel. By August, 1918, the barrage, of a few thousand mines continuously patrolled by a small force of trawlers and drifters, had destroyed a dozen U-boats and closed the Strait. It stopped the U-boats because the Strait was narrow and shallow enough to be mined and patrolled effectively from flanking bases. The U-boats, however, were only deflected from the Channel to the East Coast. Here, until May, 1918, a proportion only of the shipping was in convoy, and air and surface forces chiefly patrolled the war channels. No U-boats had been sunk for a year, yet shipping losses were high. From June, as the U-boat attack intensified, more and more ships were sailed in convoy, aircraft were concentrated on escort, and the surface patrols operated as support groups to convoys in their area. No evasive routeing was possible, yet

shipping losses were reduced to a very low figure, except amongst the few ships still sailed independently. U-boats were repeatedly attacked and five were sunk.

In home waters and the Western Approaches—the limit of anti-submarine escort was longitude 12°W—the convoy surface escort work was done by a force of destroyers, sloops, and patrol vessels never exceeding a total of 170 ships, and by a few flotillas of trawlers. When convoy was introduced the shipping loss rate dropped to one-tenth of that of independent sailings, and the turn-round of shipping in port was expedited. It broke the U-boat blockade completely. No convoy was delayed for fear of minefield or U-boat attack. Of the 16,000 ships sailed in ocean convoys, U-boats sank 96, or 0.6 per cent. Of the 68,000 ships sailed in coastal and short sea convoys they sank 161, or 0.24 per cent., all by torpedo—convoy prevented the use of the gun. Over the same period U-boats sank by gunfire and torpedo in home waters and the Western Approaches 1,500 ships sailing independently, and 160 independent ships by mine. Five of the 84,000 convoyed ships were mined.

The important point is that the primary reason for the defeat of the U-boat was not an accession to the strength of the anti-submarine forces, nor the development of anti-submarine weapons and means of detection, nor blockade, bombing of their bases, and patrolling of their transit areas. These no doubt contributed, but the primary reason was the system of shipping control and of shipping defence operated with such singular success in the preceding centuries. Under this system small escort and support forces accomplished what more numerous patrols and hunting forces failed to do. By being in the right place at the right time they wrested the initiative from the enemy.

As Admiral Sims, the Commander of the U.S. naval forces in European waters, informed the Navy Office in June, 1917, convoy was, to quote his exact words, "a purely *offensive* measure."

The use of Aircraft against Submarines, 1914–18 War

So far I have made only passing reference to the use of aircraft in anti-submarine operations. There is, I believe, an idea in some quarters that few aircraft were used on maritime operations and then with results of no great immediate importance. It may also be thought that there is little to be gained from studying the activities of these out-dated aircraft, as different from the modern jet as steamships from ships of sail. A study of history, however, does not suggest that new vehicles and weapons of war alter principles which in the past have governed the successful conduct of operations of war.

Although the Admiralty operated all maritime aircraft throughout the war, the official history of the naval operations completed in 1931 makes only passing reference to the use of aircraft in the war at sea. The history of their operations is embodied in the official history, *The War in the Air*, which was not completed until 1937, by which time the Country was rearming on the basis of decisions already made. It is, perhaps, inevitable therefore that the history of aircraft in the war at sea in its most crucial years in the 1914–18 War has not received the attention it deserves.

Were few aircraft used at sea? Were their results of no great immediate importance? In answering these questions the source that I use is the official history, *The War in the Air*. There were 433 aircraft operating with the Grand Fleet and Northern Patrol in October, 1918, and numerous aircraft employed at sea in the Mediterranean. I shall not again allude to these but consider only the shore-based anti-submarine aircraft operated in home waters.

Upon the declaration of the U-boat blockade in early 1915, the Admiralty embarked upon an intensive expansion of the Royal Naval Air Service for anti-submarine operations. Airships, flying-boats, and seaplanes and their carriers were built. Until convoy was introduced, hunting and routine patrols in transit and coastal areas, and in the Western Approaches, were carried out.

From its inception, air escort and support was an integral part of the ocean convoy system, the only limitation being the numbers of aircraft with sufficient endurance and airworthiness available to operate with the convoys. In this work the airships were invaluable for they were the only long range aircraft available, and could provide night as well as day escort, and frequently made sorties of over nine hours.

During the last six months of the war the daily strength of anti-submarine aircraft averaged 190 aeroplanes, 300 seaplanes and flying-boats, and 75 airships. On the average they sighted 28 and attacked 19 U-boats and flew on anti-submarine operations 14,000 hours monthly—a record, it may be remarked, not achieved in the 1939–45 War until mid-1943. More and more, as convoys were increased in numbers, were aircraft switched from patrol duties unco-ordinated with shipping movements to convoy escort and support. In 1918, of the thousands of ships with both air and surface escort, only four were sunk.

The U-boats reacted to convoys with surface and air escort in three ways in order to obtain the tactical advantages of speed, surprise, and secrecy in attack. First, they increasingly made their attacks at night, that is, when they were comparatively free from the risk of air attack. Secondly, to exploit their high surface speed and for ease of identifying and firing at targets in darkness, the U-boats attacked on the surface. In 1918, half the U-boat attacks were made at night surfaced, and in the closing months of the war the percentage was rising towards two-thirds. Finally, the U-boats began to revert to operations beyond the range of the existing air escorts because, although finding targets was more difficult, when found attacking was less hazardous.

The solution to this latter development in U-boat tactics lay in the provision of long range, shore-based aircraft, but these at the time could not be made available. The types of aeroplanes suitable for anti-submarine warfare were also urgently required for the Army and for the independent bombing force.

I stated that convoy was instituted by order of the Government and I have indicated that the system, despite continued losses amongst independently sailed ships, was not made comprehensive until the closing months of the war. A degree of opposition to its adoption continued to the end.

The late Earl Lloyd George in his memoirs has said hard things about the Admiralty, but he has done less than justice in not pointing out that the opposition to convoy was fundamental in the philosophy of war which had influenced the thoughts of statesmen, and the Navy, for the previous 40 to 50 years, and which was not to be easily eradicated. The doctrine which had emerged was that convoy was a system of defence to be used for the defence of the battle fleet, military transports, and special military supplies. The system was not considered suitable for the ships carrying the ordinary trade of the Country, since the task of the Navy was viewed as being to keep the sea routes inviolate. Blockade and patrol was the so-called offensive method of doing this.

One of the worst results of the defence of routes theory was that it distorted

what would be involved in the problem of putting merchant ships into convoy. For years the shipping defence problem had been expressed in terms of routes and the value and volume of the cargoes transported over the seas. The number of ships involved in the respective trades was not taken into account. Up to the end of April, 1917, shipping statistics were issued weekly showing weekly losses—since the Winter of 1916, 50 ships a week, 40 British and 10 foreign—and the weekly arrivals and departures of shipping at U.K. ports shown as some 5,000 in all. The idea was that it was heartening to our own public and concealed from the enemy the effect of his U-boat campaign.

Unfortunately the result was to give a seriously wrong impression, not only to the public and enemy but to many of those concerned in naval defence.

The 5,000 arrivals and departures included every class of vessel. The entrances and clearances at U.K. ports of British ocean-going ships from overseas, comparable to the 40 lost, *were not* 5,000 *but about* 280. The wrong impression given had two bad results. It disguised, until April, 1917, the real rate of loss and exaggerated the magnitude of the administrative task involved in a convoy system. The escort of thousands of vessels a week would have been an impossible effort—20 arrivals and departures a day was a manageable problem.

It was not, in fact, until the end of April, 1917, that, after consultation with the recently created Ministry of Shipping, the Admiralty learned that not more than 140 overseas ships inward, and a like number outward, would require convoy weekly.

Trade Defence Policy between the Two Wars

After the 1914–18 War, little time elapsed before the fighting forces were reduced to a scale commensurate with the thesis that no great war was likely within ten years. This ten year rule operated until 1932. Its cancellation did not begin to affect defence measures until 1933. Under disarmament—and disarmament conferences continued until 1934—the naval staff of the Admiralty was cut to the bone; the minesweeping, anti-submarine, and trade divisions were eliminated on the grounds of economy shortly after the war ended and, again on the grounds of economy, historical research into the problems and solutions of the recent war was brought to a virtual standstill. Thus, the naval staff was largely shorn of what the First Lord, Mr. Winston Churchill, had described on its creation in 1912 as the means "of sifting, developing, and applying the results of history and experience, and of preserving them as a general stock of reasoned opinion available as an aid and as a guide for all who are called upon to determine, in peace or war, the naval policy of the Country." The consequences adversely affected our defence measures in the inter-war years and affected our operations in the opening years of the war while we were fighting with the forces and bases provided on the basis of pre-war planning.

No less important were the civilian and economic reactions to the rigours that had eventually been imposed upon the Country in order to win the 1914–18 War, which it was felt had been fought to end wars. In the military sphere the national reaction was characterized by disarmament, in the economic field by a return to *laissez-faire*.

The key volume of the official civil histories of the 1939–45 War, *British War Economy*, contains a penetrating and stimulating study of the inter-war period.

Rearmament was undertaken, the history points out, on the basis that "industry ought not to be interfered with"; that it was designed for what became termed "a war of limited liability." What the civil history terms "the doctrine of normal

trade" persisted until its impracticability was roundly denounced by the Chiefs of Staff in February, 1938; that not until the German seizure of Prague in March, 1939, was the doctrine of "a war of limited liability" overthrown by "the concept of total war"; and that, as one consequence, when war came we had no war reserves of the great cargo capacity consuming commodities, grain, iron-ore, and timber. Equally serious, in the civil historian's view, were "the effects of the political education given to the people in the wistful peace-time years", when the power of blockade was renamed 'sanctions' and envisaged as an instrument of the new international order. Blockade, renamed upon rearmament 'economic warfare,' was popularly, and as late as March, 1940, officially declared by the then Prime Minister as "the main weapon." Yet, since 1937, it had been recognized, the civil history points out, that "the German war machine would be able to run at full strength for 15 or 18 months at least, even if the blockade"—which it did not—"drastically cut down essential German imports."

All these factors deeply influenced our trade defence measures and, in 1935, Parliament was informed that convoy would not be welcomed by the trading community. The Government intended to leave the shipowner, the civil history explains, "as free as possible to follow the normal incentives of his calling," under a war risks insurance scheme similar to that operated in the 1914–18 War.

However, by 1938 the Admiralty had completed plans for convoy and had calculated the delays incidental to running the system as equivalent to a reduction of 15 per cent. in the shipping delivery rate. This reduction, the Admiralty was confident, would be more than offset by the smaller loss rate to be expected amongst ships sailed in convoy. Clearly, convoy delivery rate was dependent primarily upon the number of escorts available, for upon this depended the number of convoys that could be run to various destinations for slow and fast ships respectively, and the frequency with which they could be sailed. Moreover, running mercantile convoys in time of war was not only a question of preserving ships so that they could regularly deliver in safety cargoes adequate for the Country's war effort, it was also a matter of deploying and employing our forces in the manner best suited to preserve ships and at the same time to engage the enemy anti-shipping forces in decisive action.

The question was, would convoy be required against U-boats? Germany, Italy, and Japan, our potential enemies, all had submarine fleets. Germany had about 50. The Admiralty appreciation ran somewhat as follows:—

Under the Anglo-German Treaty of 1935, Germany had agreed to restrict U-boat operations so as to protect the lives of neutrals and non-combatants at sea. During the 1914–18 War no means of locating submerged U-boats had been evolved. But such a means, admittedly of limited range, the Asdic, had been developed, and it was believed that finding and attacking U-boats had been simplified.

The strategic situation was similar to that of 1918, except that Germany had no Flanders U-boat bases. Her major surface warships, however, unlike those of the 1914–18 War, were designed for oceanic operations. These were to be contained in the North Sea by the Home Fleet, operating from northern bases in conjunction with reconnaissance patrols by Coastal Command aircraft, whose primary task was to be this. It was assumed that the greatest immediate threat to our trade would be from surface raiders, and that should the enemy employ submarines against shipping in accordance with Prize Regulations, their operations would be successfully countered by a system of patrol of sea areas and routes by surface and air craft, by the diversionary routeing of shipping sailed independently, and by a blockade of U-boat bases

by minelaying. A patrolled mine barrage in the Strait of Dover was to close that route to U-boats. But, and this is important, convoy was to be introduced if surface raiders inflicted heavy shipping losses or if U-boats waged unrestricted warfare.

The anti-submarine vessels and aircraft available on the outbreak of war were few in number, whilst the majority of those built and building were designed for coastal patrol work. The Fleet Air Arm aircraft were no more than sufficient for work with the fleets. As the recently published first volume of the air history, *The Royal Air Force* 1939–1945, puts it, referring to the build-up of the Royal Air Force, " the task of producing a fighter force capable of protecting our cities and a bomber force able to strike back at Germany had absorbed most of our energies and output, leaving very little over for purely maritime aircraft . . ." The result was that those of Coastal Command were essentially coastal. The Command, as the air history states, " was equipped in the main with obsolescent aircraft," with a radius of action, except for two flying-boat squadrons, of about 250 miles. U-boat detection was subordinate to this surface ship reconnaissance. As a consequence, and because of the Command's recent growth and the doubt that persisted up to the end of 1937 as to its primary task, the aircraft were not equipped and the aircrews not trained to attack U-boats. Although anti-submarine bombs were carried they were to prove, in common with those of the Fleet Air Arm, harmless to submarines. The anti-submarine capabilities of aircraft available were, therefore, comparable to those of 1918.

So far as U-boats were concerned, they were tougher, had greater endurance than those of the 1914–18 War, were equipped with a trackless torpedo, had greatly improved wireless communications, and a high surface speed also characteristic of the U-boats of 1918. The Germans had made an intensive study of their U-boat operations in the 1914–18 War and had evolved and tested a system of successfully attacking convoys without air escort.

Trade Defence in the 1939–45 War

The U-boat attack opened with the sinking without warning of the liner *Athenia* on the first night of the war. The U-boat commander actually exceeded his instructions, but the Admiralty reacted by instituting convoy. Outward convoy dispersed in the South-West Approaches, where the anti-submarine escort met a homeward-bound convoy with its anti-raider escort. Ships above a certain speed limit, carefully based on the expected operational performance of U-boats, and also very slow ships, were excluded from convoy. These continued to be sailed independently. While ships which had not been formed into convoy were reaching the Western Approaches, U-boats' sinkings were heavy.

In October, neutral ships were given convoy if they applied for it, and convoy for the Scandinavian trade was started across the North Sea. The convoys sailed without loss until, on the invasion of Norway, they ceased. The East Coast convoys, started on the outbreak of war, were operated with conspicuous success to its end. The loss rate through all forms of enemy attack of the tens of thousands of ships convoyed was one-tenth of one per cent.

The Dover barrage quickly barred the Strait to U-boats. After losing three, the enemy ceased to use the passage. A great northern mine barrage, originally intended to extend between Scotland and Norway, but after the fall of Norway laid between Iceland and Scotland, did not influence U-boat movements. It destroyed only one. Throughout the war the mining of enemy U-boat bases was steadily carried out. Once laid these minefields, of course, came under enemy control so that comparatively

few U-boats, about a score, were destroyed by them. The mining, however, complicated the enemy's task of getting his U-boats into and out of their bases safely, imposed precautionary delays on passage and in training areas, and forced him to create large minesweeping forces.

Up to the fall of France, U-boats had sunk some 200 British, Allied, and neutral merchant ships sailing independently. Of the thousands of ships sailed in French and British convoys, they had sunk 15 in the absence of air escorts. The surface escorts had destroyed eight attacking U-boats.

With the fall of France in June, 1940, U-boats began to use the French Biscay ports, and in July all British ocean shipping was routed through the North-West Approaches. Many surface and air escorts had to be diverted to meet the threat of invasion. For those remaining, bases had hurriedly to be improvised in the north-west. Until these were available our short-legged surface and air escorts could escort convoys but a short distance beyond the North-West Approaches. Despite rebuilding, the U-boats' operational fleet had been reduced to 26, but the reduction in numbers was to a great extent compensated by the use of the Biscay bases. In June, Italy entered the war and began operating U-boats in the Atlantic.

From the start of the war, the U-boats, as in 1918, had been making the majority of their attacks against independent ships by night. In August, 1940, they began to adopt these tactics against convoys and, as their numbers permitted, began to develop the pack warfare evolved before the war. Long range reconnaissance aircraft to assist the U-boats and to bomb shipping also came into use. Against the U-boat tactics our surface and air escorts were virtually powerless to detect and to destroy U-boats. Asdics were of little use against surfaced U-boats, and most of the surface escorts were too slow to pursue surfaced U-boats. Since November, 1939, aircraft had been employed increasingly upon anti-submarine tasks, but at night they were powerless as they had no illuminants to enable them to attack surfaced U-boats. From June, 1940, convoy losses had begun to increase, but greater had been the increase in the independent losses.

Now in these dark days, concurrently with the threat of invasion came the threat of the reduction of our seaborne supplies below the quantities necessary for maintaining the war effort. An executive body was set up to solve the threatened shortage of supplies and it recommended that, in order to reduce the effect of convoy delays, the upper speed limit for inclusion in convoy should be reduced to allow more ships to sail independently. It hoped to increase deliveries thereby. The result, the Admiralty pointed out, far from being an increase, would be a reduction because of the higher loss rate to be expected. The Admiralty was, however, overruled and in mid-November, 1940, the upper speed limit for convoy was reduced. As predicted by the Admiralty, the independent loss rate duly increased. On the other hand, for a period of five weeks the U-boats failed to attack any convoy. The upper speed limit for convoy was not restored, however, until mid-June, 1941.

Undoubtedly one reason for this delay was that the Government's statisticians insisted upon including amongst convoy losses all ships sunk which had started their voyage in convoy even though, at the time of their loss, they had been detached from convoy or the convoy had been dispersed in the normal course of events. This inevitably raised the convoy loss rate and lowered the independent loss rate. I emphasize the point as it illustrates the operational importance of a clear grasp of the meaning of the word convoy. Thus, for instance, it is frequently stated that the North Russia convoy, P.Q.17, suffered disastrous losses. This is not so. Twenty of

the 23 losses occurred after the convoy had been dispersed, that is to say, when the merchant ships were sailing independently.

By March, 1941, more surface and air escorts were available, and location of the enemy packs forming frequently enabled us to determine if a convoy were threatened and to reinforce it, if it were within range, with surface and daylight air escorts. Our aircraft could thus be more economically employed and, as a result, some were able to extend their operations around convoys against U-boats closing in. These developments forced the U-boats to withdraw to the westward in an attempt to find convoys with only anti-raider escort south and west of Iceland.

"The turning point in this struggle," states the recently published air history of the 1939–45 War," was undoubtedly the sinking of five U-boats in March. When our destroyers put paid to the activities of Commanders Prien, Schepke, and Kretschmer, they profoundly influenced the course of the whole battle." But is this so? Of the 650 ships sunk by U-boats since the start of the war, four-fifths had been sailing out of convoy, only one-tenth had been sunk while in convoy of anti-submarine vessels. It was the extension of convoy with air and surface escort which defeated the U-boat commanders, whose efficiency generally was of a high order. The German submarine service did not depend on a few aces. It might be added that the particular aces mentioned were destroyed when attempting to attack a convoy.

The next decisive move in the anti-U-boat war was the extension of convoy with anti-submarine escort to mid-Atlantic. This was in April, 1941, when Iceland came into use as an air and surface escort base. In the same month the Admiralty took over operational control of Coastal Command.

The U-boat fleet was now expanding; nevertheless, sinkings of merchant ships did not rise commensurately. The U-boats had been forced beyond the range of their reconnaissance aircraft and had now great difficulty in locating convoys. Also, because of the daylight air escort and support aircraft and the short nights in these northern latitudes, attempts to attack convoys by day resulted in the sinking of several U-boats by surface escorts.

The restoration of the Admiralty's upper speed limit for convoy, in mid-June, 1941, and the extension of convoy with surface anti-submarine escort right across the Atlantic, marked a further step towards the defeat of the U-boat. This extension was made possible by the use of the Newfoundland bases and by increasing the fuel capacity of the escorts. Through anti-submarine convoy to West Africa followed in July.

The importance of air escort was becoming more and more apparent. Up to now only one ship had been lost in convoy with air as well as surface anti-submarine escort, and it was unfortunate that suitable air bases and aircraft were not available yet for through air escort in the Atlantic. But although aircraft had as yet destroyed no German U-boat they had, in the role of convoy escort and support, decisively influenced the U-boat war. Besides saving ships in conjunction with the convoy surface escorts they had forced the U-boats to operate in the vast mid-Atlantic.

The next decisive development came in September, 1941. Finding the mid-Atlantic an unprofitable hunting ground, the U-boats returned to the north-east Atlantic in an attempt to operate there again with air reconnaissance. But a single squadron of very long range Liberator bombers, converted to anti-submarine work, divided between Northern Ireland and Iceland, now came into operation, and a fighter escort carrier, H.M.S. *Audacity*, was employed in escorting Gibraltar convoys.

In the face of this opposition the U-boat campaign was again abandoned in favour of operations beyond the range of our air escorts and supports. Within it, although aircraft could still not destroy U-boats, convoy attacks were too hazardous and unrewarding. The *Audacity* was sunk at night in December, 1941, when outside the screen of the Gibraltar convoy H.G.76, but, for the loss of two merchant ships, her aircraft and the surface escorts had destroyed four U-boats. The successes of the *Audacity* led to the release of more merchant vessels for conversion to escort carriers, and the construction of others was now authorized.

The U-boats moved now, not to mid-Atlantic but, in January, 1942, to the American Atlantic seaboard, for, since December, 1941, the United States had been in the war. Although operating at the limits of their operational range the U-boats saw their chance to make big sinkings, for the United States was running no convoy system but relying on sea and air patrolling of its coastal routes. Between mid-January and the end of July, 1942, they sank in the waters west of 40°W no fewer than 505 ships. It was not until 15th May, 1942, that America began to introduce convoys off her eastern seaboard. Both surface and air escort was provided. Sinkings abruptly ceased, the U-boats reporting to base that they did not dare risk attacking ships in convoy. They therefore moved into the Mexican Gulf and the Caribbean, extending their range by means of supply U-boats. " Escort is not just one way of handling the submarine menace," wrote Admiral King in June to General Marshall, " it is the only way that gives any promise of success. The so-called hunting and patrol operations have time and again proved futile." When the convoy system was extended into the Mexican Gulf and the Caribbean the U-boats abandoned the theatre. By July, 1942, convoys had been instituted in all American waters between Boston and Trinidad. Of the 3,000 ships sailed in U.S. coastal convoys since mid-May only nine, or 0.3 per cent., had been sunk. Of the 505 ships that had been sunk west of 40°W, 95 per cent. had been sailing unescorted.

The development of convoys in American waters by July, 1942, forced the U-boats to switch their main attack once again to mid-Atlantic, for the difficulty of intercepting convoys there was compensated by the absence of anti-submarine air escort and support when a convoy was found. Carrier-borne aircraft could not be made available, escort carriers being engaged with convoys to North Russia or earmarked for the North African invasion forces. Half a dozen Liberators of 120 Squadron still remained. They alone, although unable to reach convoys in mid-Atlantic, could narrow the air gap in which U-boats could develop attack on convoys. In December, 1942, the conversion of more Liberators for very long range convoy work was commenced. Moreover, since July an effective aerial depth charge had been in use. By then the Liberators of 120 Squadron, in addition to breaking up attacking packs, had destroyed four U-boats. A further eight had been destroyed by shorter range air escorts and supports of Coastal Command as the U-boats rashly pursued convoys to within their range.

By March, 1943, the number of very long range aircraft had been quadrupled and one escort carrier was operating in the Greenland air gap. By mid-May, 1943, three escort carriers with support groups of surface vessels released from the North African operations, and about 40 very long range aircraft, were in operation, some now based on Newfoundland. The air gap was closed. The measure was probably the most decisive of the anti-U-boat war. The U-boats at once abandoned attacks on the North Atlantic trade convoys. Their sinkings were now negligible, their losses crippling. Since January, over 50 had been destroyed and as many damaged

by the North Atlantic convoy escort and support forces—nearly half by aircraft. "It was," reported the Commander-in-Chief, Western Approaches, a "clear-cut defeat." But the U-boats now tried switching their main attack to the mid-Atlantic U.S.–North Africa convoys in the south, beyond the range of shore-based aircraft. But here they were again defeated. In a few weeks, without themselves inflicting any losses, 16 were sunk by United States carrier convoy escort and support aircraft.

Let me turn for a moment to anti-U-boat operations in the Bay of Biscay.

When in May, 1941, the U-boats had been driven to operate beyond the range of Coastal Command aircraft, regular day and night patrols across the U-boat transit areas in the Bay of Biscay and north of Scotland had been begun. It was there that the aircraft with their limited range could best be employed. These patrols caused the U-boats to exercise caution in the transit areas, and so imposed a delay in reaching the operational area. The patrols had no kills on Atlantic-bound U-boats up to June, 1942.

In June, 1942, reinforced by medium and long range aircraft, the patrols were trebled and thereafter steadily increased, and the night patrols were equipped with Leigh Lights for night attack. In July, two U-boats were sunk. The U-boats countered these tactics by submerging during the night passage and temporarily by day on detecting aircraft. Three U-boats were sunk between July and October, but during the remainder of the year there were no kills, U-boats having now been equipped with a radar detecting device. The early months of 1943 saw a few kills—six during the first four months. But from mid-May to early August the U-boats suffered heavy losses here. Twenty-eight U-boats were destroyed. What had happened was that the U-boats had adopted the tactics of crossing the patrolled area surfaced and fighting back the attacking aircraft. We were able, with the assistance of the now fitted 10 cm. radar, brilliantly to exploit this tactical error of the enemy whilst it lasted. It did not last long. In early August, the U-boats reverted to submerged passage through the Bay and thereafter kills were few.

In September, 1943, U-boats reverted to operations against the North Atlantic trade convoys, mainly in the north-east sector, with air reconnaissance and new weapons. This renewed campaign was a failure.

Of the tens of thousands of ships convoyed across the Atlantic between September, 1943, and the end of the war in May, 1945, U-boats sank less than 20. Yet the convoy escort and support forces destroyed 70 U-boats. In 1944 and 1945, as our convoys were now secure, we operated a proportion of our carrier and surface forces as hunter-killer groups against U-boats on passage and in refuelling areas, and these added nearly 20 to the total of U-boats destroyed at sea.

During the U-boat inshore campaign which followed the Normandy landings of June, 1944, though equipped with a Snort device which enabled them to operate submerged continuously, U-boats were successfully combatted by the combination of sailing our ships in convoy with air and surface escorts.

Conclusion

The time at my disposal has not permitted me to deal more than briefly in its historical aspect with this highly important subject. Summing up, it may be said that in the 1939–45 War, as in 1914–18, the enemy attack on shipping was waged chiefly by the submarine. It was frustrated primarily by the system of sailing ships in convoy with air and surface anti-submarine escorts, reinforced in particularly dangerous waters by air and surface support forces. This combination proved

formidable even when aircraft had no lethal anti-submarine weapon. It was irresistible when aircraft gained the power to kill U-boats as well as to harry them. All other forms of attack, including surface raiders, were successfully overcome by a similar combination and disposition of forces. Surface raiders sank only five ships in a convoy, the escort of which was a single armed merchant cruiser.

Bombing of U-boat bases and construction yards did not seriously reduce the intensity of U-boat attacks. It was not until the Spring of 1945, after we had established ourselves on the Continent, that damage was sufficient to affect production to any marked degree.

In the provision of anti-submarine aircraft, carrier aircraft were essential to fill the mid-ocean gaps beyond the economic range of shore-based aircraft, and were indispensable in rapidly developing tactical situations remote from land, for providing fighter aircraft for repelling enemy air attacks outside the narrow belt of coastal water covered by shore-based fighters, and for destroying enemy reconnaissance aircraft co-operating with U-boats.

In conclusion, allow me to emphasize that what I have said deals with what occurred in the two world wars of this century and in the wars of the XVIIth and XVIIIth Centuries. How the defence of our trade is to be undertaken in any future war is not for me to say. All that I can say in this respect is that those responsible for policy and planning would be well advised to give their full consideration to how trade defence has been carried out successfully in the past.

DISCUSSION

COLONEL F. H. SMITH: In view of the success of the convoys would the lecturer recommend a 'speed' division of convoys? I think that we have to give consideration to the question of speed, because for the commander of a ship which is capable of 16 to 18 knots to be attached to a convoy the average speed of which is from six to eight knots must be disheartening. Would the lecturer suggest that in those cases there could be a division of convoys, according to speed, because it seems that the risk is tremendous for those larger vessels capable of a good speed to run at such a low convoy speed, particularly now in view of the success we had in the last war with the *Queen Mary* and the *Queen Elizabeth* sailing independently.

THE LECTURER: In the early days of the war we did not have enough escort vessels to enable us to run fast and slow convoys, and so convoy for ocean shipping was usually confined to ships capable of steaming between nine and 14.9 knots. In August, 1940, we were able to start slow homeward-bound trans-Atlantic convoys for ships between seven and a half and nine knots. In June, 1941, we introduced fast and slow outward-bound trans-Atlantic convoys, so that at last we did have slow as well as fast convoys, both outward and homeward.

COMMANDER W. R. SYMON, R.N.R.: The success of the convoy system has very largely depended on ships being in fairly close formation. Is it possible that the atomic bomb will revolutionize the convoy system? I feel that having ships in close formation in a future war will constitute a great risk from the point of view of an atomic bomb attack.

THE LECTURER: I have only been dealing with the question of what happened in two world wars, and I must leave it to others to answer the question of what is likely to happen in the future. I think I can add, however, that the real value of a convoy system is that it brings your merchant shipping under constant close protection and thereby ensures that your protection forces are concentrated at the right place at the right time, ready to attack the enemy as well as to protect the shipping.

COMMANDER G. A. TITTERTON, R.N.: Could I supplement the last question by

pointing out, in addition to what the lecturer said, that the question was really dealing with air attack whereas the lecturer has been dealing in the main with U-boat attack. It is up to the Fleet Air Arm and/or the Royal Air Force to stop any attack by atomic bomb on merchant convoys.

MR. H. G. MCDAVID: Might I ask whether the Admiralty can give us any information as to the position of the U-boat fleet at the end of the war? When we got to Hamburg there were enormous quantities of prefabricated parts of U-boats all ready to be assembled, and it was a frightening business looking at all that sort of material. I do not know what the position would have been from our point of view if the war had not finished. Do we know how many of those submarines were operational or would have been made operational very quickly? Was there the likelihood that we should have had a vast number against us, or was it the fact that man-power would have been the limiting factor?

THE LECTURER: I think that the crews were the limiting factor there.

THE CHAIRMAN: I think I might add a little to that. It is, I think, a question of the crews. When you get losses up to a certain point, your power of attack immediately begins to fall away. It is the human factor. That was made clear round about 1942 and the beginning of 1943. When enemy losses in any particular area reached a certain amount—and we in the Admiralty Staff had views on what that amount would be at the time—a switch to another area was immediately made by the German command. Even although there may have been a great amount of enemy submarine tonnage under construction, had our bombers allowed it to be completed, I think that the turning point in the end would probably have been the crews—the provision of skilled men to carry out the attacks.

WING COMMANDER E. BENTLEY BEAUMAN: The statement was made that it was up to the Fleet Air Arm and/or the Royal Air Force to prevent the dropping of atomic bombs on convoys. I do not know much about the question technically, but I should have thought it possible for atomic mines to be produced which could be let loose in the middle of a convoy.

THE LECTURER: I am afraid that this is a question of the future outside the subject of my lecture.

CAPTAIN A. FARQUHAR, R.N.: With reference to the comment made concerning the limitations of the crew, I believe that in the 1914–18 War something like half the tonnage destroyed was sunk by about 25 men. Was there anything comparable in the 1939–45 War?

THE LECTURER: I will ask Lieutenant-Commander Waters, of the Historical Section, to answer that question.

LIEUTENANT-COMMANDER WATERS: Roughly it was about one-third which was sunk by a few U-boat commanders in the 1914–18 War, but they were all independent ships. The same thing occurred in the last war, 65 per cent. of the ships sunk being without escort. Between September, 1939, and June, 1941, when we began end-to-end anti-submarine escort to the North Atlantic convoys, there were U-boat commanders who became famous for their sinkings; but 80 per cent. of the ships they sank were without escort. No U-boat commander rose to fame by attacking convoys.

VICE-ADMIRAL S. M. RAW: There has always been a curious belief that speed in itself is a protection against submarine attack and, arising from this, that the ship with more than an average turn of speed should make use of her speed and go off on her own. From the submarine commander's point of view, from which I can speak with some authority and experience, there is no magic in speeds of 16, 17, 20, or even 25 knots: the single ship unescorted, even if she is zig-zagging, is a sitting bird to the modern submarine with long range and possibly homing torpedoes. The submarine commander can make his attack at his leisure and he is not worried about a counter-attack either before he fires or afterwards.

We have heard a great deal about the value of air in anti-submarine work and from personal experience I can fully confirm the dislike of the submarine officer for aircraft. Before the days of air escort the submarine commanding officer did not mind so much matching his wits against those of the destroyer officer, but to have the added feeling of the possibility of an aircraft being above him adds very little to the peace of mind of the submarine officer and seriously limits his operations not only on the surface but also submerged.

THE CHAIRMAN: One of the points which struck me was how much we lose through not having a history quickly after a war. I think the lecturer said that the naval history of the 1914–18 War did not come out until 1931 and the air history until 1935–37. I have a feeling that if a good many people who had to take decisions after the 1914–18 War had had more knowledge of the history, some of those decisions would perhaps have been different. Again, I think the same thing is happening on this side of the Atlantic as regards the 1939–45 War. We have not yet a naval history giving even a general summary of what happened. It is a great lack. The Americans have gone ahead in this direction. Rear-Admiral S. E. Morison, a professor at Harvard, has been producing volume after volume of American naval history in a popular form which anybody can read, but which at the same time has been written by an historian and is a first-class summary of what did happen. I think that we have made the same mistake as we did after the 1914–18 War in spite of a Cabinet recommendation after that war to the effect that we must have histories quickly after the war. We still have not done it.

The second point I should like to stress is the importance of having air escorts with the convoys, and the only way in which you can be certain of having them all over the world is to take them with you, that is, to have escort carriers available for the convoys. I have a feeling that we shall not have many available very quickly if we suddenly drop into a war, which we hope we shall not. I am afraid it will be a long time before we get escort carriers, yet we ought to have learned that lesson.

I know that you would wish me to thank Rear-Admiral Bellairs for coming here to-day. He has had a nasty cold and it was good of him to come and deliver his lecture in spite of it. (*Applause.*)

GOLD MEDAL AND TRENCH GASCOIGNE PRIZE ESSAY, 1953

By Wing Commander J. E. T. Haile, R.A.F.

" Discuss whether the present methods of entry and training, and conditions of service, of officers, including auxiliary and reserve, are keeping pace with changed social conditions and modern weapons."

Introduction

THE subject is contentious. Matters social must embroil matters economic, and together they must bring into a discussion matters political.

Because so many discussions take place without sufficient knowledge, it will be necessary to build up a series of factual surveys before drawing the threads together in a synthetic account of their relationships and attempting to reach any conclusions. In examining the past and assessing the present, it should not be forgotten that it is the future which is at stake. Conditions cannot be isolated and studied *in vacuo* ; forecasts of future trends depend for their accuracy upon a correct interpretation and projection of the present in the light of experience of the past.

The scope of the discussion is wide and it is necessary to impose the arbitrary limitation of not allowing it to range back much beyond the beginnings of the XXth Century. If hard things are said, the reader will judge them in the light of his own experience and convictions. For its part, this essay has used as its yardstick the cherished belief that the well-being and efficiency of Her Majesty's armed forces depend almost wholly upon the quality, loyalty, and training of the officers.

Social Changes in Great Britain, 1900–1953

The Industrial Revolution set in train numerous social problems. The population of Great Britain had increased from about 13,000,000 in 1815 to some 30,000,000 in 1880 ; the country became more urbanized and the towns larger, dirtier, and uglier. By 1900, the very poor were more numerous and were beginning to grow restless in their wait for a share in the prosperity they could see increasing around them. Meanwhile, middle-class reformers began to assist the leaders of the new trades unions, and Fabian propaganda started to make headway in influential papers such as *The Pall Mall Gazette*. This was the age of the new popular Press, frankly commercial, giving the masses what the masses wanted ; it was not political, but it stirred up envy and discontent by contrasting the difference between middle-class and working-class living conditions. When a group of industrial magnates called on Northcliffe and complained of the way he had handled their case in a strike, he retorted : " Well, gentlemen, the ha-pence of the working people are as good as yours—and there's a damn sight more of 'em ! " The need for the redistribution of the national income was preached by the revolutionaries, and the idea was rendered acceptable to the intellectual and radical middle-classes by the belief that it would penalize only the old aristocracy.

Redistribution of wealth took place as taxation rose. In 1885, Joseph Chamberlain told property owners that they must " pay ransom " to the community for their possessions ; in 1894, death duties started to exact it. In 1907, the budget introduced the principle of taxing unearned income at a higher rate than earned income. In 1909, super-tax on income over £3,000 was imposed and the income-tax rate was increased.

The 1914–18 War speeded up the process of social change. The Edwardian aristocracy of wealth lost heavily and a new wealthy class of war 'profiteers,' some 340,000 strong, appeared. The expansion of administrative and executive posts demanded by a more complex society and the growing need for technical experts caused *The Times* to say: "Staff workers have . . . only just begun to realize the power they wield."[1]

In the same year, the French Ambassador, M. Paul Cambon, told Mr. Winston Churchill: "In the twenty years I have been here I have witnessed an English Revolution more profound and searching than the French Revolution itself. The governing class has been almost completely deprived of political power, and to a very large extent of their property and estates; and this has been accomplished almost imperceptibly and without the loss of a single life."[2]

After the war, high prices and increased taxation bore heavily upon the middle-class. When prices came down, unemployment began to grow. The great trade depression of the early nineteen-thirties increased the gulf between the classes, for while the middle-classes suffered impoverishment, the working class suffered chronic unemployment and near starvation. But, by 1936, the threat of Mussolini and Hitler began to cloak the problems at home with more sinister possibilities abroad.

The stress of the 1939–45 War speeded up social change. The Beveridge Plan appeared and the Atlantic Charter was proclaimed. By 1945, the ideal of millions had become a semi-detached house of pre-war middle-class standards; but the masses also wanted greater security and less responsibility than had been the lot of the middle-classes, and they wanted the assurance of steady advancement. They were led to believe that once the old, outdated economic system had been thrust on one side and vested interests removed, the great industries, built up and expanded in war-time, would speedily improve the standard of life of the people. Full employment would be guaranteed.

At the General Election of 1945, the Labour Party was returned to power with a large majority. Massive support came from the working classes, and the middle-classes had a genuine desire for social reform awakened by their revulsion at the squalor and misery disclosed by the compulsory evacuations from towns threatened by air attack.

From 1945 to 1951, the Socialist Government strove to put into practice the recognized aims of political labour—equal opportunity for all and public control of production and distribution. The results of the work of this Government affect largely the developing situation in Great Britain today, and some details of its administration must be recalled.

Coal, road transport, electricity, gas, iron and steel, and the Bank of England were nationalized. The National Health Service and National Insurance scheme were introduced. Willy-nilly, the nation was brought under the umbrella of the Welfare State. But the cost of food and raw materials in the world markets rose. Subsidies kept down the apparent cost of living, and expenses were recovered by direct and indirect taxation. The incentive to earn was sapped. Controls, shortages, the adverse balance of trade, black markets, and high taxation all served to undermine morale and integrity. Slogans such as "Work or Want," "Britain Can Make It," "Fair Shares for All," had little value as exhortations.

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[1] 5th February, 1920.

[2] O. F. Christie. *The Transition to Democracy*, page 173.

The relative position of labour and management underwent a profound change due to the practical workings of full employment and the strengthening of the trade unions. The status of the professions changed too as the distribution of incomes altered.

> " The real net level of wage earnings (that is, after allowing for the rise both in prices and taxation) has risen by between 10 and 35 per cent. since before the war. But a corresponding figure for the representative salary income would show a loss of anything from 20 to 30 per cent. in real net purchasing power."[3]
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> " The growth of professionalism . . . has resulted in excessively specialized training . . . the cost of this specialized training . . . has become so heavy that the State has had to intervene . . . and all the evidence suggests that increased dependence on the State results in a progressive lowering of the social and economic status of a profession. . . . Dilution has also been the fate of the fighting Services. The decline in the social status of army officers has been very marked, and the financial treatment accorded the officers of all three Services is proving detrimental to recruiting."[4]

There was also a decline in religious belief and in the sanctity of marriage, and it is probable that the future historian will find that these factors have played a larger part in the changes of the last two decades than is even now supposed. But all social, economic, political, and military values in Great Britain in the future will be affected by the changing ratios between the age groupings of the population and by the fact that the population is not replacing itself. (Table A.)

Summing up the present situation, Lord Winterton has written : " Nevertheless, the virtual disappearance of that which Disraeli called ' The Two Nations,' has been of national psychological benefit."[5]

The Development of Modern Weapons

The War at Sea

At the turn of the century the battleship was the mistress of the seas. The large-calibre, armour-piercing, high velocity shell had temporarily won the battle over protective armour. In the experimental stage were efficient sighting and ranging instruments necessary for the effective use of heavy armament at long ranges. The main threat to the battleship, it was believed, lay in torpedo attack delivered at night or under cover of smoke by the fast torpedo-boat, which had to be fought off by the torpedo-boat destroyer. Cruisers were the eyes of the fleet. Submarines, mines, and wireless telegraphy were being developed rapidly.

The War of 1914–18 produced no new weapons in sea warfare, except for the blimp and aeroplane. At the end of hostilities, the Royal Navy was left with the problem of finding better means to detect and kill submarines and to guard itself from air attack.

In the period 1918–1939, great advances were made. Asdic was introduced and the performance of aircraft, aircraft carriers, and anti-aircraft guns was improved. The outbreak of war in 1939 found the Royal Navy well-balanced and well-trained.

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[3] *The Economist*, 24th January, 1948 ; see also 15th November, 1947.

[4] *The English Middle Classes*, Lewis and Maude. Page 163 (1950 Ed.).

[5] Extract in *The Sunday Times*, 23rd August, 1953, from Lord Winterton's memoirs *Orders of the Day*.

New weapons sprang surprises on both sides. Magnetic mines were overcome by degaussing equipment. Radar was adopted for surface vessel detection and for gun-laying. Midget submarines, human torpedoes, frogmen, and limpet mines threatened fleet anchorages. New types of landing and amphibious support craft were produced. Airborne radar forced submarines to remain submerged, and mining from the air closed many sea lanes.

At the end of the war, the position of naval weapons was as follows. The battleship had given pride of place to the aircraft carrier. No fleet could operate without air cover provided either by its carriers or from friendly shores. The radius of this air cover had to be extended beyond surface visual range because of the advent of the controlled bomb. A counter had to be found to the high-speed submarines, and equipment invented to detect a submarine 'snorkeling.' The atomic bomb set new problems for the defence of a fleet at sea and in harbour. Modifications to the proximity fused shells were required to prevent premature explosions caused by target responses from large waves. Guided weapons were envisaged in defensive anti-aircraft and offensive ship-to-ship and ship-to-shore roles. Air-to-air guided weapons were being developed for naval fighter aircraft.

Weapons at sea are becoming rapidly more technical, and the means of propulsion more complicated; but they do not require a different type of naval officer to operate them, nor will they replace the need for good seamanship and a mastery of the traditional arts of sea warfare.

The War on Land

In the early nineteen-hundreds the British Army was absorbing the lessons of the Boer War, and *The Defence of Duffer's Drift*[6] was an unofficial forerunner to the illustrated training manuals of today. Fire and movement, a striving for the open flank, envelopment, and the severing of communications were the tactical doctrines. The British relied upon rapid, aimed rifle fire; the French upon their *soixante-quinze*; the Germans upon machine-guns. Troops went by train to railhead and by march to battle; supply and artillery were horse drawn. Experiments were being made with motor transport, but solid tyres confined them to roads. Cavalry produced the shock troops and fighting reconnaissance parties, although cyclist formations were not unknown. Communications were by runner, heliograph, inefficient land-line, and wireless telegraphy. Aeroplanes were beginning to supplement observation balloons and kites for reconnaissance and artillery spotting. A stout heart, confidence, an eye for country, and the birthright to command were the requirements of a British Army officer of that period.

The 1914–18 War found the opposing armies locked in a trench system from Switzerland to the North Sea. They learned the power of the machine-gun and wire to dominate movement, and the enormous quantity of gun ammunition required to sustain a static battle. To attempt to break through the defensive system new weapons were introduced; poison gas and tanks were used, together with low-flying aircraft for trench-strafing.

Peace left the Army with the problem of the development and control of armoured formations, the need to produce a tank with good range, cross-country performance, and mechanical reliability, and the necessity to provide the infantry with an effective anti-tank weapon. By 1939 the British Army had a new range of artillery weapons and the Expeditionary Force was highly mechanized, although a high proportion of

[6] By " Ole Luk-Oie ", Major-General Sir Ernest Swinton.

the soft-skinned vehicles still had poor cross-country performance, and no armoured division went to France. 'Stuka' support for advancing armour, *coups-de-main* by parachute and glider-borne troops, and the activities of fifth columnists were surprise innovations.

As the war proceeded, heavy, long-range, tank guns were developed, and special infantry anti-tank weapons were provided, e.g., the *Panzerfaust*. Later, multi-barrelled mortars and rocket batteries were introduced. The dual-purpose gun, for example the German 88 mm., came into its own. Greater attention was paid to anti-aircraft artillery ranging from mobile four-barrelled 20 mm. to static guns of over 5 in. calibre. Poison gas was not used, but the threat of the new 'nerve group' of gases presented problems to both sides. An increasing use of radio and the introduction of radar posed new problems for the intelligence and 'Y' staffs. Special armoured vehicles were developed, e.g. flail tanks. A useful method of fighting by "artificial moonlight"—the reflection of searchlights from low clouds—was practised, attack lines being marked by Bofors 40-mm. tracer. The proximity fuse increased the efficiency of anti-aircraft fire and also allowed accurate air bursts to be made against enemy ground troops in the open. The Bailey Bridge often turned success into victory.

The teeth of an army are sharper than ever, and, thanks to continuing improvement in the performance of all vehicles, air support, and the use of the helicopter, their bite is speedier. But the tail is fatter and far more technical. Both must work out offensive and defensive tactics for atomic attack.

The War in the Air

By the end of the 1914–18 War the aeroplane had ousted the balloon, kite, and dirigible from active participation. In the 1939–45 War, all three returned in minor roles; the balloon as a defence against low-flying attack, the kite as a means to hold aloft aerials from the surface of the sea, and the dirigible as anti-submarine protection in American coastal waters. The technical development of the aeroplane in 1918 had reached a point where all could foresee that an air force would play an important part in any future conflict in support of war on land and at sea, and where the great thinkers foretold that, before successful intervention on land or at sea was possible, it would be necessary to win a measure of air superiority in the skies over the battle areas. These true prophets henceforward taught the need of an independent bombing force, and were without honour in their own countries.

By the end of the 1939–45 War, the air arm had become a precision instrument. Flying could take place by day and by night in all weathers. Airborne radar made navigation and bomb-aiming extremely accurate over sea and land. Air superiority was a prerequisite of all operations if they were to have a chance of success. But the balance between defence and offence was disturbed: an atomic bomb had been dropped from a single aircraft unleashing destruction equivalent to 20,000 tons of T.N.T. No longer could air defences be content to wear down a bomber offensive by steady attrition. The jet engine promised to give fighters increased performance over bombers, but radio and radar countermeasures made the control of the fighter force difficult. The speeds of bombers were also increasing, but the German R.4M air rocket was a foretaste of future fighter armaments. At sea, the snorkel device nullified the effect of airborne radar against submarines, but the controlled bomb could sink battleships. On land, the anti-aircraft shell fitted with the proximity fuse threatened bomber formations, but 'carpet' bombing and rocket attack from the air could seriously impede troop movements.

Just as the advent of the tank and the aeroplane in the 1914–18 War foreshadowed the might of armoured formations and air power in the 1939–45 War, so the appearance of radar, the expendable, pilotless, V.1 jet-propelled bomb, the V.2 free flight rocket, the atom bomb, and the blueprints of more advanced guided missiles, herald the appearance of weapons which will be developed far beyond today's dreams.

For the present, the pilot still requires the dash and cool, safe hands of the pioneer with technical knowledge grafted on to a liberal education.

Methods of Entry and Conditions of Service

The pay, promotion prospect, gratuities, pensions, and allowances for Regular, Short Service, National Service, and Reserve officers of both sexes are set out in a wide variety of pamphlets issued by the Services. It is impossible to make a concise summary of the conditions because of their number ; it may not be generally realized that the Royal Navy lists sixteen different Reserves, not including the Royal Naval Minewatching Service and the Sea Cadet Corps. It should, however, be safe to assume that the standards of life and emoluments offered to those officers who make the Services their careers set the tone and conditions for all others. Since 1946, a close balance has been struck between the pay of the three Services, and this has made Treasury control easier.

The growing importance of psychology as a diagnostic factor in social life has made its mark in the field of military selection, and steady improvements have taken place since the United States Army used intelligence tests in the 1914–18 War.

The Army and the Royal Air Force select their officer cadets for training for permanent commissions from boys between the ages of 17 and 19. The Navy prefers to take them at an earlier age. But all three Services have adopted the same type of selection procedure ; it has been designed to be fair and to be seen to be fair, and gives an equal opportunity to candidates from all walks of life. It is concerned with assessing the three main components of an applicant : his medical fitness for the life he proposes to lead, his personal qualities, and his intelligence and academic attainments coupled with any special aptitudes required.

The medical standards are responsible for a considerable proportion of failures ; 16 per cent. for the Royal Navy, and over 25 per cent. for flying duties in the Royal Air Force. The committee which examined methods of cadet entry into the Royal Navy[7] did not consider the standards to be too high, and they found the percentage of medical failures to be approximately the same for candidates from all social strata, although unfitness because of dental neglect was higher among those from the poorer background.

The academic standards of candidates are tested by means of a written examination set by the Civil Service Commission, and there appears to be little significant difference between the results of candidates from independent, direct grant, and maintained grammar schools.

In order to assess the personal qualities of candidates, each Service has an Interview Board whose task it is to discover whether an applicant has the potentialities to enable him to develop under training the qualities required in an officer. The Board procedure normally takes two or three days and consists of a number of interviews and exercises designed to show up the characteristics of the candidate in individual situations and in company with others. It has been found[8] that boys from

[7] Cmd. 8845. *Cadet Entry into the Royal Navy.*

[8] See Table B. Royal Navy and Royal Air Force Cadetships.

independent schools have a higher rate of success than the rest of the field and allegations of bias have been made against the Boards. But these results should not occasion surprise. A broadly based home life and good schooling help to provide a boy with the standards of leadership, integrity, and conduct, together with a modicum of the social graces expected in an officer. It has recently been said that: "Within the British social structure, authority is more readily accepted from those who possess the symbol of high social status. . . . Research has shown that the great majority of Royal Air Force officers, non-commissioned officers, Regular airmen, and National Service men, believe that a traditional sanction for authority holds good in the Royal Air Force."[9]

In the three Services time to count for pension begins at the age of 21. Promotion up to the equivalent rank of lieutenant-commander is by time, provided examinations are passed, and conduct and medical fitness remain satisfactory. Thereafter, promotion is by selection. About one-half the officers may expect to be promoted to commander. There is a one in five chance of being promoted to captain (Royal Navy), and a one in ten chance of reaching the rank of rear-admiral, major-general, or air vice-marshal. The retiring ages range from 45 years for a lieutenant-commander to between 54 and 60 for flag officers. Set out in Table C is the present pay of naval officers.

On paper, the attraction of a Service life appears bright, but public response is poor. The Royal Navy reports[10] that 14.2 per cent. of cadetship vacancies remained unfilled from September, 1948, to May, 1953, and that 53 per cent. of candidates, who had qualified educationally and medically, failed because they lacked the right personal qualities. Yet the Royal Navy requires to fill only 260 Dartmouth cadetships a year for a strength of 140,000, and the annual requirement of officers for the three Services falls short of 5,000. These should not be beyond the capabilities of the nation to provide.

The Army has not made public its shortages, but a recent report said: "Unhappily, nearly 60 per cent. of all entrants who successfully pass the necessary examinations and the Regular Commission Board, are graded before arrival as 'likely to make a below-average officer,' usually because of an unexciting personality. Leadership is the one essential quality in a would-be officer, and . . . Sandhurst . . . is plainly failing to tap important sources of Britain's potential young leaders . . . and is indeed being driven to open at great expense a special school of its own, Welbeck College . . . which will take boys of about 16, educate them free for two years, and then feed them into the R.M.A."[11]

The present expensive advertising campaign to attract officer pilots into the Fleet Air Arm and Royal Air Force indicates that all is not well in recruiting for the flying branch of those Services.

A Service officer must be a leader. There is a place for the highly qualified technician who lacks the qualities of leadership in the civilian organizations which support the Services; but such a man, valuable as he is, should not be in an officer's uniform. The Services are quite clear about this fact, although it is not generally appreciated among the public. A leader requires an understanding of human nature

[9] Mr. Albert Cherns, an Air Ministry psychologist, in an address to the British Association, as reported in *The Times*, 9th September, 1953.

[10] Cmd. 8845. *Cadet Entry into the Royal Navy*. Page 6.

[11] *The Times*, February, 1953.

and an ability to apply that understanding in manipulating men in accordance with his own will. He also requires a degree of confidence in his own ability and power of judgment.

A Service officer must possess other qualities as well as leadership. He must have a sufficient measure of native wit and a sufficiently broad background to give him the ability and desire to profit from experience and instruction. He must possess physical and moral courage; he must have a sense of social propriety; he must be ready to act on his own initiative and accept responsibility; he must be energetic and mentally robust; his integrity must be unimpeachable. The proper admixture of these qualities will result in his ready acceptance as an officer by the rank and file and by his brother officers. But there is no single mould from which officers with these qualities are cast.

Lord Trenchard has written: "I believe that to achieve good results one needs a blending of all types; as I once said in the Royal Air Force—'The scholar and the craftsman, the linguist, the organizer, and the mechanic, the poet, and the Philistine, and even the crank.' This results in a clash of opinions, and it is from clash of opinions that progress results."[12]

It should not be thought that the Services are setting their sights too high. The quality of the National Service candidates for commissions shows that the right type of men are available. The Services cast their nets wide, and public education ensures that all boys have the opportunity to reach the academic standard required for a commission. But school and local traditions play their part in reducing the effectiveness of the appeal of a Service career, and "In some parts of the country there is . . . considerable unwillingness to enter a career with an unusual social milieu, unless others who have pioneered in such fields have brought back reassuring reports of them."[13]

It is clear that the conditions of service require closer study in order to account for the apparent lack of attraction of a military career.

There is comradeship a-plenty in the Services, and the majority of retired officers will testify that the frustrations and difficulties encountered from time to time 'all came right in the end.' But there is a strong feeling in the schools and among parents of good social status that the life has deteriorated, and some possible reasons are as follows.

Under the Government of 1945 to 1951 the Services were subjected to political interference in their day-to-day affairs, which seriously undermined the authority of officers over their men, and which lowered their prestige in the eyes of the Country. This interference resulted from a natural interest in the well-being of the National Service conscript in peace-time. It is also endemic of Socialist theory that the hierarchy of command in long service, Regular forces is conservative by nature and must, therefore, be suspect in times of sudden social change.

Unbalance and undermanning since the war, demobilization and expansion programmes, the disruption caused by the arrival and departures of National Service men, the constant drain-away of experienced officers and non-commissioned officers, all led to such feelings of frustration that they could not be bottled up within the Services, but were voiced abroad. The undermanning continues: "It is sad to see battalions so weak on the ground. Indeed, underposting has reached such a pitch

[12] Letter in *The Times*, 18th March, 1953.
[13] Cmd. 8845. Page 63.

that the universal cry from units of the Rhine Army is for more drafts. . . . Units are already little more than skeletons."[14]

The present-day status of the officer also has a part to play in the discussion. At the outbreak of the 1939–45 War, officers were drawn from that part of the community accustomed to command in the professions, industry, and commerce. Their social standing was high. The needs of war, particularly the demand for officers for the greatly expanded technical branches, caused social dilution to occur. After the war the trend continued, for as Mr. C. R. Attlee has said : " The abolition of social classes is fundamental to the Socialist conception of society."[15]

To the social reasons for the loss of status of officers must be added Service reasons for, as was overheard recently, " majors are not what they were." Rank has been allowed to depreciate in value. The causes are twofold : first, officers with high technical skills would command large salaries as civilians, thus forcing the Services to pay them comparable salaries by the grant of high rank. In order to keep the military command structure intact, executive posts are up-graded in step. The recent award of increased pay to Service doctors is an example of rank dilution. . . . " In the Royal Air Force, corresponding advantages will be achieved by accelerated promotion."[16] The second cause stems from the first : to fill the increased number of higher ranks, young officers must be promoted before they have acquired the necessary experience, and in peace-time respect is weakened. In war the problem does not arise, for the operational prowess of the young commander compels esteem from all.

Throughout the post-war years officers have been faced with financial embarrassment due to the fact that their pay has not kept pace with the rising cost of living. The Welfare State has removed many Service advantages relative to civilian life, e.g. pensions and free medical attention. It has been noticeable that officers have not been able to enjoy the sport and relaxation previously open to them, and the burden of administration has been so heavy that a Director of Medical Services instructed his doctors to watch officers closely in order to catch the first signs of a nervous breakdown.

There is no evidence that the Country has lost its spirit of adventure, but boys, parents, and advisers now look closely at the material factors of any job—pay, comfort, stability, and long-term prospects.

There is a Royal Air Force advertisement which suggests to applicants that they " are prepared to ignore the superficial advantages of civilian life for the less obvious but more real rewards of a career in the service of your country." The lack of response indicates that the gap is too wide. The Treasury should take note of an eminent industrialist's warning : " I would suggest, however, that you will only be able to meet the need for highly skilled technicians in the Air Force of tomorrow if you can offer to the right type of man a long-term career, with interesting work, good conditions, and a remuneration in line with that of competitive and comparable industrial organization. I am, perhaps, here treading on dangerous ground, but I have found that in this world you get exactly what you pay for ; you will not get the highly skilled technicians needed for a highly specialized air force unless the remuneration is sufficient to attract the right people to it."[17]

[14] Lieutenant-General Martin in *The Daily Telegraph*, 23rd September, 1953.

[15] *The Labour Party in Perspective*. C. R. Attlee, 1937.

[16] *The Daily Telegraph*, 15th September, 1953.

[17] Sir Frederick Handley Page, in a lecture to the R.A.F. Technical College, Henlow, 30th March, 1953.

Training

Modern weapons have added to the general technical knowledge required by officers. It has been said: "The first essential, however, is that the officers of all Services should accustom themselves to the idea that science is now not just an aid in warfare but at least as important an arm of any Service as any other."[18]

But Lord Fisher's note on the training of a naval officer is equally applicable to any Service; science has increased the task not altered it. "The role that a naval officer has to fulfil is a varied one; professional requirements are of great importance, but many qualities are essential. In distant parts of the globe he has to represent his nation; and is often called upon to exhibit considerable diplomatic and social qualities. Essentially, therefore, his training should be broad and liberal; and everything with a narrowing tendency should be avoided. His hands require training as much as his brain; and constant and early contact with men is essential to encourage self-reliance and command."[19]

Any discussion on Service training must cover basic training, unit training, staff training, technical and specialist training, and training for higher command, and the thread which binds them together is the example set up by superiors. The standards of dress, behaviour, discipline, enthusiasm, energy, willingness to learn, attitude to the men, and general tone are set in the day-to-day contacts of all officers. This heavy responsibility serves to underline the fact that the past, present, and future are interwoven; a falling off in the quality of young officers for a year or two will have unavoidable and lasting repercussions five or ten years later when their influence begins to be felt. Standards fall more easily and more quickly than they can be built up.

The basic training provided by the cadet colleges and officers' training schools is broad, liberal, and more practical than before the last war. It has a slight scientific bias for all cadets and care is taken to encourage those with a technical bent to work for specialization later.

After basic training comes unit training, where the young officer learns to apply his skills as a member of an effective force. He learns to appreciate the 'feel' of men, the effects of good and bad orders, the value of sound administration, the use of the initiative, and the frustration provoked by indifferent staff work. The standards of training vary with the unit and depend not only upon its location and role but upon the quality of the commander. The post-war years have offered good opportunities. Equipment has been plentiful and has not been allowed to grow obsolete. Trouble in Malaya, Egypt, East Africa, and Korea, together with large-scale exercises in Europe, have provided invaluable incentives, but units have had to contend with the disruptive effect of the drafting and demobilization of the National Service men.

There are some general weaknesses. In the Royal Navy, it is difficult for officers to obtain adequate sea time, although the transition to a small-ship navy will help to improve matters. The re-equipment of the Fleet Air Arm with new aircraft, weapons, and carriers will induce a readier acceptance that it is "the sharp cutting-edge of the Fleet."[20]

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[18] *The Times*, 25th August, 1953.
[19] Lord Fisher, 1902.
[20] *The Times*, Royal Navy Supplement, 15th June, 1953.

In the Army, there are two blind spots. Of the first it has been said: "The disadvantage of the British system, which was only too plain in Exercise 'Grand Repulse,' is that the value of atomic weapons in both attack and defence may be largely wasted until substantial numbers of the Army's best lieutenant-colonels and majors are compelled to get to grips with the technical problems involved."[21]

The second is the lack of realization of the depth to which hostile fighter-bombers can operate behind the forward troops. Supply columns are still too long and vulnerable. Groups should consist of not more than four vehicles each.[22]

There are three main weaknesses in the Royal Air Force. The first is that young officers are given insufficient opportunities to learn to command men. Administration has been centralized to free officers for their operational flying roles. This method is essential in war, but it stores up trouble for itself in the future. On the other hand, in the Army the platoon and company commanders have had to occupy their time with so much detailed administration that tactical training has suffered. A happy compromise has not been found in either Service.

The second weakness is that operational squadrons are still being given insufficient 'live' practices. The third weakness is that, apart from a small number of units, the Royal Air Force is too immobile. This must affect the professional outlook of the young officer; and yet British forces require to move rapidly around an enemy possessing interior lines in order to concentrate and achieve surprise in defence and offence.

Staff College training is good. The doctrine of co-operation is firm and is cemented at the Joint Services Staff College and later at the Imperial Defence College. There is, however, a need for a junior inter-Services college to which specially selected officers should be sent early in their careers before they have time to acquire a 'one-service' mentality. In passing, it is interesting to note that the Army treat a staff appointment as an honour, whereas the Royal Air Force regard it more in the nature of an affliction. The Royal Navy maintain traditional silence on the matter.

Specialist and technical training must aim at producing an officer who can employ and maintain the weapons and devices provided by the scientists. He must also be capable of explaining what modifications are desirable and specifying future requirements. He will be called upon to meet civilian specialists and technicians on their own ground.

The rapid introduction of radar in the last war caught the Services short of officers trained in that sphere. To guard against similar surprises in the future special steps are being taken. For instance, the Army has just opened Welbeck College for boys who will enter a technical corps after passing out of Sandhurst, and the Royal Military College of Science at Shrivenham is expanding. In the Royal Air Force, the first officer cadets destined for the Technical Branch have entered universities after initial Service training at the Technical College at Henlow.

The women's Services have a particular part to play in the specialist role, and permission has recently been given for women officers of the W.R.A.C. to specialize permanently in certain technical corps of the Army.

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[21] *The Times*, Military Correspondent, 5th October, 1953.

[22] For an examination of this problem see R.U.S.I. JOURNAL, August, 1953, page 446. *The Road Movement of Military Transport Vehicles*, by Colonel R. A. H. Walker.

The opportunities for training for higher command in peace-time have never been greater. The world-wide reactions to the Russian threat have given practice in the art of generalship. Integration and co-operation with Allies and the problems of managing civil populations have provided lessons which in the past have only been learned after the outbreak of war.

Service training is keeping pace with the advance of modern weapons and with the changes in the officers and men who use them. New methods are adopted after trial, and trusty favourites are retained. It is understood that the Royal Air Force is about to embark on an experiment in unit management having as its aim the alleviation of the petty restrictions of Service life. But the difference between a mob and a Service is discipline. " It is only by enforcing old-time discipline . . . that this fear of death can be overcome. The need for discipline is as great as ever, for the value of good equipment and machines can almost be lost if the discipline needed to operate them is lacking."[23]

Auxiliaries and Reserves

A democracy relies upon its standing forces to buy the time in war for the reserves to be mobilized. Reserves are less expensive than Regulars, and in the present potentially dangerous international situation, when armaments are so costly, reserves assume great importance. Auxiliary and reserve officers of all categories are members of the civil community and, apart from those with compulsory reserve liabilities, their willingness to spare time for training is affected by their happiness in their units, by the degree of the threat to national security, and by their economic position.

The spirit of voluntary assistance in any local or national cause was once strong in Great Britain, especially among those classes who provided the Regular officers. Under the ægis of the Welfare State, with its attendant economic and social revolution, this spirit was dissipated. Those forces which depended upon volunteers were seriously hit. Officers who continued to serve carried a heavy administrative burden ; they were short-staffed, many had to absorb conscripts into a volunteer force, and were expected to keep these forces well trained and at a high degree of readiness in accordance with the Country's pledges to the N.A.T.O.

In spite of all handicaps, the auxiliary and reserve formations manage to train to a high standard, as may be witnessed at the Summer camps of the fighter squadrons of the Royal Auxiliary Air Force and at the divisional exercises of the Territorial Army. Modern equipments are available for training and many National Service men have had recent operational experience, but the middle-rank officer volunteer remains so heavily burdened that tactical training suffers.

Auxiliary and reserve officers mirror their Regular comrades, but the reflection is distorted : the attractions of Service life are enhanced, verve and goodwill abound ; but the economic malaise is also magnified : " In these stringent times private claims are pressing and too many observers are forced to apply for their release for domestic or business reasons."[24]

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[23] Sir Frederick Handley Page, at a lecture on 30th March, 1953, to the R.A.F. Technical College, Henlow.

[24] The Commandant, The Royal Observer Corps. *Air Power*, October, 1953.

The Services appear unable to persuade the Treasury that the volunteer officer reservist expects to recruit as well as to lead, and that a more positive policy of encouragement in the shape of a reasonable outlay on drill halls, social centres, and adequate allowances would transform the response.

Auxiliary and reserve forces are going down hill and will continue to do so as long as there exists " trifling pin-pricks and little meannesses, and an air of bureaucratic indifference."[25]

A Summary of the Situation in 1953

It is time to stop and consider the inter-relationships of the factors. First, it is necessary to see what effect changed social conditions have had upon methods of entry, conditions of service, and training. Secondly, the examination must cover the interplay of the development of modern weapons with those same three subjects.

Changed social conditions, the democratization of the nation, have made it imperative for the Services to open wide their doors to applicants for commissions from all social strata. This has been done. The development in education has provided the opportunity for all boys and girls to aspire to an officer's career, but the scholarship scheme to universities has reduced the number of boys available to enter the Services at 18. Methods of selection used by the Services follow the most advanced psychological teaching and are demonstrably without social bias.

The same forces which worked to change social conditions also played their part in reducing the favourable terms in which pre-war Service officers found themselves *vis-à-vis* their civilian counterparts. There are disadvantages in Service life, and it would appear that the conditions of service have been so reduced in value that an unbridgeable gap has been formed. The Services are not attracting enough men and women of the right quality.

Social conditions have not yet made any significant impact upon training. Military training for peace and war still follows a traditional pattern. The development of a national army, composed of volunteers and conscripts drawn from an industrial urban population, has altered the methods of managing men; but discipline is still successfully taught. It might be mentioned that one of the factors which makes its teaching more difficult is the absence of the example of self-discipline once set by officers at " Daily Prayers " (Q.R.,R.A.F.,841).

The development of modern weapons has increased the requirement for officers with a technical bent, and has compelled the selection tests to conform. It has also made it necessary for the Services to draw from the widest possible cross-section of the population: in doing so they have come into competition with industry and are finding the competition too keen.

The need to pay high salaries to specialists has led to an inflationary tendency in rank. Accelerated promotions have brought about repercussions in the command structures which have weakened the position of all officers. This in turn has helped to influence adversely the conditions of service.

Training has tended to become more specialized as the complexity of weapons increases, and additional facilities have had to be provided not only to give the extra training required, but also to attract the high quality boy into the Services early and offer him a good education, even a university course, if he will choose a military career.

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[25] Air Marshal Sir Robert Saundby. *The Aeroplane*, 9th August, 1953.

The increased time spent on basic training has meant that the National Service officer has a limited part to play, and that the Short Service officer must serve for longer and his gratuity be increased considerably to counterbalance his age at the end of his Regular service. It also means that more is expected of the auxiliary and reserve officer at a time when the volunteer is struggling with personal economic problems.

Guided missiles and weapons of mass destruction have not yet influenced training in the British forces much below those officers who take part in higher command and staff exercises, but clearly in the next few years tactical reorganizations will become necessary which will tax the ability of all.

The better-than-usual training facilities available to the Services at the present time, part of the price to be paid for the unsatisfactory international situation, help to cloak the growing weakness in the quantity and quality of officers. It is notoriously difficult to keep a unit in good heart and with a keen fighting edge in peace-time. To do so calls for good officers. Inferior officers beget inferior units. In the past the British have been able to expand their military strength upon a hard core of first-class units ; they must be able to do so in the future.

A Problem and Alternative Remedies

The discussion has served to underline the fact that the Services are not obtaining the quality and quantity of officers they require. The situation is influenced by three main factors : public opinion, emoluments, and Service life. It is difficult to determine what weight should be given to each factor for they are closely interwoven, and each factor is made up of a number of small items. To take an example from another level, one is told that the poor quality of the uniforms issued to aircraftmen of the Royal Air Force is a recruiting deterrent, and yet the good man does not grouse about it ; indeed, he is always smart and well turned-out. Nevertheless, the feeling remains that uniforms play an adverse but undefined part, and so the lack of definite values must not be an excuse for inaction.

Public opinion has been called the ' pawn of propaganda.' Undoubtedly, it influences the rise and fall of governments, but as far as the Services are concerned it plays a smaller role than might be supposed. The public only takes a general interest in the armed forces at times of emergency or ceremonial : at other times it affords them little thought, except when some incident is given prominence by the Press because it has news value. The reason is lack of numbers. The Regular forces represent a very small proportion of the voting population of the Country, and they are not organized into a trades union. If the public is not concerned, then the responsibility for defence must rest ever more heavily upon the Government of the day, advised by the Chiefs of Staff and the Treasury.

Officers are dependent upon the beneficence of the Treasury for their emoluments and their standard of living. The Treasury has its duty to perform in obtaining the nation's requirements at the cheapest rate. If the rate offered for the task of holding Her Majesty's commission is low in comparison with that offered by civilian professions of comparable status, the manner in which this becomes noticeable is that officers resign, the recruiting of high-calibre candidates falls off, and the vacancies tend to be filled by applicants from a lower stratum. The Services must have officers and are forced to accept lower standards.

The Services are attempting to redress the situation by offering free education or grants to boys of sixteen or under who undertake to enter a Service as a career when they are old enough. This is nothing new, the Royal Navy has been doing it for years. However, it is interesting that the other two Services have adopted a similar course at a time when the Royal Navy is finding that the scheme's attraction is no longer effective, and when all educational authorities condemn any attempts to force a boy to choose a career at that age. In fact, it is the parent who is being persuaded into choosing a career for his son in order to reap the pecuniary benefits offered by such a course of action.

In commerce and industry, competitors with the Services for the attraction of the good candidate, it is a well-known rule of advertising that it is the quality of the product that counts; no matter how effective the original selling campaign may be, the public will not continue for long to purchase an inferior article. Similarly, unless a Service career is a worth-while life, materially and spiritually, the effectiveness of these offers of financial help will wane. This is no place to judge whether the schemes are wise in themselves, but it seems that the Services will have difficulty in choosing future permanent officers from boys younger than 16.

Service life is unique and is difficult to relate to civilian life, but before the war the standard of living of officers was comfortable, pay went far enough, and leave was generous, thus compensating adequately for the inconveniences of a military career. The years since the War have seen officers struggling to make both ends meet, the scales of staff and equipment for messes—the officers' home—have been poor, leave has been reduced, and the intensity of work and tempo of life have become too high.

The niggardly treatment of the National Service officer has had its part to play in reducing all standards. In the case of the Royal Air Force he is paid some 13 shillings per day, issued with two battledresses and a warrant officer's type great-coat, and given a uniform grant in cash of only £3 10s.

If it is to regain some of its attractions, Service life must regain its balance. Stability was achieved after the 1914–18 War by reducing the forces so that they could pick their recruits from a large number of applicants. The international situation has prevented a similar reduction taking place after the 1939–45 War, and the position can only be created artificially by offering all ranks greater inducements than those available in civilian life. The remedy lies with the Treasury, whose traditional policy of 'all concessions short of a pay-rise' can find no honourable place in the treatment of the Services today.

But pay rises can seldom be limited to one section of the community. The Treasury must refuse to allow itself to be stampeded into temporary and expensive palliatives; future trends must be taken into account.

The Treasury could say that the better financial position in 1953 of civilians in relation to their Service counterparts arises not so much from their normal salary scales, but from their greater opportunities to thwart the income tax collector by means of expense accounts and similar aids. Any reduction in the income tax rate, or any steps to examine expense accounts more closely, would improve the relative position of the Service officer. In addition, as long as the rate of taxation remains high, industrial concerns are ready to finance expensive and elaborate welfare and training schemes out of taxation, thus adding to the attractiveness of the jobs they offer. It seems probable that taxation will get lighter rather than heavier. The Services should wait and see.

The Treasury's case of waiting for better days is strengthened by the figures of population trends supplied to the Committee enquiring into Cadet Entry in the Royal Navy (Table D). These figures show that the number of 18-year-old boys was at a minimum in 1952 and will be 55 per cent. greater in 1966. The situation will grow easier, and remedial action can be left until the numbers fall again.

Conclusion

The Treasury has grounds for a policy of *laissez-faire*. Persuasive arguments can be marshalled for the future, but those who accept them have forgotten that this future rests on foundations of today. The Services can die for want of proper sustenance. They are short of officers, they have accepted officers who are below the necessary standards, but the number of vacancies increases.

A comparison may be made between the present situation and a man with a wasting disease. There is a continual loss of weight and a steady decrease in bodily vigour, yet these remain unnoticed until the patient takes to his bed. He is rested, nourishment of the proper kind is provided, and the disease is arrested ; but because aid was long in coming and the symptoms were ignored, he takes time to rebuild his strength. He finds it difficult to convince his neighbours, friends and enemies alike, that he has regained his old vitality. There is a loss of confidence in him. During his period of illness and long convalescence his responsibilities must rest upon the shoulders of others.

Great Britain cannot afford to allow the armed forces to lose their status. The illness must be arrested now. The Treasury has seldom been faced with a situation in which it must enter into competition with civilian firms in bidding for suitable men and women under conditions of scarcity. Industry is expanding and must continue to expand if Great Britain wishes to maintain its standards of living, and it remains to be seen whether recruiting problems are eased by a temporary increase in numbers in the immediate future.

The Services have absorbed the impact of modern weapons and have adjusted their methods of entry and training to the changed social conditions of the nation. A military organization must reflect a country's social structure, but normally there is a time-lag in the process of change. Those conditions of service which could be controlled by the Services themselves have kept in step with the pattern of surrounding life, and if there are hardships to bear the Services are ready to bear them in the common cause. But it is painfully obvious that there has been a breach of faith by the Government's financial advisers. Greater incentives in cash and kind must be offered to officers at once.

TABLE A

The Trend of Population of Great Britain

(The figures are taken from the Royal Commission on Population Report, Cmd. 7695.

Total population (Table XXXVIII)

	Millions	
1851	20.8	
1911	40.8	
1939	46.6	
1947	48.2	
1962	50.2	Projected, assuming family size constant at same level as among couples married 1927–1938.
1977	50.7	
2007	48.9	
2047	45.5	

Age distribution of the population (Tables XLIII and XLIV)

	Date	Proportion, per 1,000 of the total population in each age group		
		0–14	15–64	over 65
	1851	355	598	47
	1891	351	601	48
	1911	308	639	53
	1939	214	697	89
Projected, assuming family size constant at the same level as among couples married 1927–1938.	1947	215	681	105
	1977	194	646	160
	2007	191	651	157
	2047	191	638	171

3. *Commission's conclusions*

(*a*) "The population of young adults (15–39) will show a fall of about 1·4 millions in the next 15 years." (Chapter 9, para. 248 (iii).)

(*b*) "A substantial decline in the number of young men of military age is to be expected during the next ten years, and this decline will continue if the average size of the family remains at the pre-war level." (Chapter 13, para. 353.)

(*c*) The population replacement deficiency rate is "of the order of 6 per cent.". (Chapter 23, para. 626.)

TABLE B

AWARD OF CADETSHIPS

Royal Naval Cadetships

Comparison of the distribution of cadetships among schools with the distribution of boys in these schools. (September, 1948, to May, 1953.) (Cmd. 8845, Table 8, page 8.)

Type of school	Entry at 16		Special entry (18)	
	Cadetships awarded	Approximate distribution. Boys of 15+ Schools	Cadetships awarded	Approximate distribution. Boys of 15+ Schools
	Per cent.	Per cent.	Per cent.	Per cent.
Independent	52	26	65	37
Direct Grant	12	11	8	12
Maintained Grammar	36	63	27	51
	100	100	100	100

Royal Air Force Cadetships

Comparison of the distribution of cadetships among schools for entries 45 to 56 inclusive.

Type of school	Cadetships awarded
	Per cent.
Headmaster's Conference schools	46.2
Other schools...	15.3

TABLE C

The 1953 Career Prospects, Basic Pay, and Age of Retirement of Officers entered as Cadets

(Based on App. D, Cmd. 8845)

	Average age of reaching rank. (Average age of retirement is shown in brackets.)			Range of basic pay* per annum (including marriage allowance for married officers)		Retired pay per annum (tax free grant on retirement is shown in brackets)
	Executive	Engineer	Supply	Married	Unmarried	
				£	£	£ £
Lieut.-Commander	31 (45)	31 (45)	31 (45)	1,050–1,232	712—894	500 (1,000)
Commander ...	35 (50)	35 (50)	36 (50)	1,396–1,578	1,013–1,195	675 (1,000)
Captain under 6 years seniority	41	45	46	1,715–1,825	1,332–1,442	875 (1,000)
Captain of 6 years seniority or more	47 (50½)	51 (52)	52 (55)	1,926–1,980	1,497–1,551	1,000 (1,000)
Rear-Admiral ...	50½ (54)	52 (56)	55 (58½)	2,666	2,190	1,200 (1,000)
Vice-Admiral ...	54 (57)	52–56 (56–60)	55–57 (56–60)	3,213	2,737	1,400 (1,000)
Admiral	57 (60)	—	—	3,670	3,194	1,700 (1,000)

* Selectively improved in 1954, *vide* p. 289 of the JOURNAL for May.—EDITOR

Principal Additional Allowances Payable to Naval Officers

Command money. £54 15s. 0d. to £182 10s. 0d. per annum according to rank. Paid to an officer in command of a sea-going ship.

Entertaining allowance (tax free). £82 2s. 6d. to £182 10s. 0d. per annum, according to rank. Payable to officers in receipt of Command Money.

Flying pay. £54 15s. 0d. to £219 per annum for officers on flying duties.

Submarine pay. £73 per annum. Payable to submarine officers.

Lodging allowance. £200 15s. 0d. to £365 per annum, according to rank. Paid when lodging is not provided in kind. Not paid when marriage allowance is paid.

Ration allowance (tax free). £73 per annum in the United Kingdom. Paid when board is not provided.

London allowance. £100 7s. 6d. to £155 2s. 6d. per annum, according to rank. Paid in addition to marriage allowance and lodging allowance to officers whose place of duty is within 10 miles of Charing Cross.

Local overseas allowance. Paid to officers in shore appointments overseas at varying rates to take account of the local cost of living. (Not payable in Germany.)

Uniform allowance. Initial grant on first commissioning. Certain income tax concessions are made annually towards cost of upkeep.

Notes on Pay

1. The retired pay of a senior captain in 1953 is £1,000. If he is married with two children this is worth £400 at 1937–38 values[26], but in 1910 he would have received a pension of £600.

[26] *The Sunday Times*, 1st November, 1953. Quoted by the Rt. Hon. William Mabane.

2. The grant paid on retirement in 1953 is £1,000 (tax free). This may be regarded as an inexpensive concession by the Treasury: a 31-year life assurance policy without profits for the same amount would cost about £2 per month—equivalent to a pay rise of just over one shilling per day.

TABLE D

Population Trends

Official figures from Cmd. 8845, for England and Wales, show that the number of 18-year old boys was at the minimum in 1952. Taking 100 as the datum figure for 1952 the numbers for subsequent years are as follows:—

Year	*Number of 18-year old boys*	*Remarks*
1952	100	... Totals 332,000 boys.*
1953	104	... —
1954	103	... —
1955	105	... —
1956	107	... —
1957	109	... —
1958	107	... —
1959	103	... —
1960	101	... (343,000 is calculated figure.)
1961	114	... —
1962	120	... —
1963	130	... —
1964	117	... —
1965	142	... —
1966	155	... (500,000 is calculated figure.)
1967	140	... —
1968	132	... —
1969	127	... (396,000. Anticipated that numbers will stabilize at this number. But see Table A.)

* Note.—The Services require as officers approximately 1 in 66 of this figure annually.

MILITARY APPLICATIONS OF WATER-BASED AIRCRAFT

By Group Captain G. W. Williamson, O.B.E., M.C., M.Inst.C.E., M.I.Mech.E., F.R.Ae.S., R.A.F. (retd.).

On Wednesday, 3rd February, 1954, at 3 p.m.

Commodore R. Harrison, D.S.O., R.D., R.N.R., in the Chair

The Chairman: We were to have had the pleasure of having the Chairman and Managing Director of Short Brothers and Harlands, Rear-Admiral Slattery, to preside this afternoon. Unfortunately, he has had to go away—I will not say to a more important job—but he has been directed away.

There is no necessity for me to introduce our lecturer. He has already lectured to us twice. I will ask Group Captain Williamson to speak.

LECTURE

At the foot of every Contents page which appears in the Journal it says, "Authors alone are responsible for the contents of their respective papers." For me, it is more than ever necessary to draw attention to this for two reasons. I am employed as a personnel relations consultant by Short & Harland, and they may or may not take my advice, so I cannot commit them in anything I say. Secondly, I am not going to express any of my opinions at all, but merely to lay before you a few facts about the past and the future of flying-boats.

In our Journal, there have been a number of excellent papers and articles on the flying-boat; perhaps this is the first to deal with water-based aircraft, the product of American research, though possibly *we* thought of such developments long ago.

Water-based aircraft is a general term which covers all aeroplanes able to alight on or take off from the surface of the sea; in their most advanced form, these aircraft are represented by the Consolidated Vultee Sea Dart, upon which development many millions of dollars have been spent; but in addition, recent American anti-submarine flying-boats also have the new look, partly as the result of the same researches.

Sir Winston Churchill's "Composite Brain"

The 1939–45 War was unique in its use of research of various kinds; the atomic bomb and the jet engine, produced by physicists and engineers respectively; research into social science which, carried to its logical conclusion, might double the output of our factories in five years; and operations research into anti-submarine warfare, which saved hundreds of ships, thousands of lives, and millions of pounds.

This type of research was initiated by Professor P. M. S. Blackett, who has been awarded the Nobel prize for Physics; it depends for its success upon co-operation between heads of the Armed Services and teams of scientists of the highest quality in the world; and it should be noted that the idea was first put forward by Sir Winston Churchill in 1936, when he styled it "the composite brain.'

The proposals to be made in this paper can all be summed up in a single phrase: "As operations research was so successful in destroying German submarines in 1939–45, perhaps we should apply it now to the tactics of future sea warfare."

This is a technique which is fully developed in the United States of America; such a composite brain can advise the Government as to the best investment of money in military resources; and the best investment of those military resources in warlike

operations. It is the more necessary for all the N.A.T.O. Powers, chiefly because the battle will be won or lost upon the continent of Europe by the military resources of the United States of America and the United Kingdom; the problems will be entirely different from those of 15 years ago.

As we enter upon the atomic age, some implications of recent development begin to loom upon us. We do not fear to see them: it is a platitude to say that we should be prepared. Research is the cheapest form of preparation.

We do not know what nuclear-propelled aircraft will look like; but plenty of designers believe that something in the shape of a flying-boat will be necessary, as the smallest atomic aircraft would have a gross weight of more than 250 tons. It has been calculated that the lead or concrete screen alone would weigh at least 75 tons, not a great deal more than the take-off weight of fuel in very large aircraft of today.

Military Applications of Nuclear Energy

When motor cars were styled horseless carriages, no artist or inventor visualized the streamlined racing car of today; and similarly, although contracts have been placed with two American firms for airframes, and two more for nuclear engines, no one has guessed "the shape of wings to come," as Short's Mr. Keith-Lucas would say. Aircraft for vertical take-off already exist, either as helicopters or fighters of tremendous thrust; and it is conceivable that ships of the air provided with atomic propulsion might take off, vertically, from sea or land.

A week or two ago Mrs. Eisenhower launched the submarine *Nautilus*, named after the Jules Verne submarine in *Twenty Thousand Leagues Under the Sea*. Its air conditioning will enable it to remain submerged for weeks; and its homing torpedoes, with atomic warheads, might doubtless be discharged without the submarine commander seeing his enemy. The submarine cost $27,000,000, without the engine; the cost of a complete conventional submarine might be $17,000,000. At a rough guess, atomic engines for the *Nautilus* would cost at least as much as the structure of the vessel; and £20,000,000 for a single submarine might prove to be a deterrent for any other Power but the U.S.A.

Several batteries of atomic cannons have reached Mainz in Germany; they will fire conventional shells up to a range of 20 miles. The calibre is 11-inch, and at a guess the weight of the gun without its transporter might be 45 tons; so a cruiser could have half a dozen of these as its main armament.

But the atomic shell is more important than the gun; it has been described in the United States of America as "a miracle of production." The miracle was brought about by teamwork between the Atomic Energy Commission, several arsenals, and a few great firms. The shell may measure 11 inches by about 48 inches; as a small atom bomb it could be carried by a fighter; and it could be used as an atomic warhead fitted to a heavy rocket or guided missile.

At Bikini, an atom bomb was dropped into the sea in narrow waters; dropped upon the runways of land aerodromes, the effect might be much more damaging. It will be for operational research to work out mathematically the best use of hydrogen bombs: that is, it might be better to attack bomber aerodromes than cities. There are a dozen types of British and American atom-bombers; in order to accommodate the present large hydrogen bomb, four bomb-bays of the Consolidated Vultee B.36D are being knocked into one.

Radio-Controlled Models

It seems certain that tactical problems of any future air-sea warfare would have to be solved by operations research in this Country, in much the same way as this technique is used in the United States of America; and operations research would sooner or later demand experimentation to determine the weighting of the various factors of each problem. Both in this Country and in the United States of America there has been a good deal of research on pilotless aircraft, other than that on guided missiles; more than 20 years ago the Royal Aircraft Establishment modified a Fairey IIIF on floats so that it could be flown unpiloted, after having been launched from a catapult. Even on a rough sea, it made excellent landings; but it was an expensive form of pilotless target, and was replaced by the de Havilland Moths, ordered 100 at a time, and equipped with radio sets and automatic pilots.

Experimentation into new designs of water-based aircraft has followed these early experiments to the extent of constructing pilotless radio-controlled models of various sizes up to 20 feet span; they are dynamically similar in all aspects to the projected aircraft, including engine weight and thrust. Other inexpensive methods of research include the manufacture of half-scale models such as the Short Scion, and the piloted model which preceded the Saunders-Roe Princess.

Experiments such as these supplement, for water-based aircraft, the tank tests on models to determine the optimum shape of hull, in much the same way as scale models are used for the same purpose in the wind tunnel. Mr. Ernest Stout, then Assistant Chief Engineer of Consolidated Vultee, extended this type of research to thousands of experiments involving take-off from the water, radio-controlled flight and landing, by the use of such scale models. His experiments were inspired by the results of some long-ago tank tests by Short Brothers on the reduction of a tendency to porpoise; and this must have been the first time that an increase in the length-beam ratio was suggested.

For tank tests, Mr. Stout used 21 hulls of varying dimensions as regards length, depth, and beam, but all with the same volume or internal capacity; and 21 corresponding hulls for test in take-off, flight, and landing. The hulls were almost invariably attached to the same set of wings, engines, and tailplane, a great economy in construction costs. The radio-controlled models of some of these aircraft made no fewer than 2,000 flights, equivalent to three years' testing of the full-size aircraft. Some of the experiments in attitudes or in seaworthiness could not have been carried out with a human crew in view of the danger to life or limb.

The feature of models with the same internal capacity or volume resulted in a reduction of head resistance as they grew longer and thinner. It was found that, owing to the reduction in head resistance, a long, thin hull had great advantages over the ordinary broad-beamed flying-boat; the Short Sunderland has a length of about 8½ times the beam; the Convair Tradewind is half as long again.

While Consolidated Vultee was working with radio-models consisting of the same set of wings provided with a variety of hulls, Glenn Martin were carrying out full-scale experiments by cutting the crown and wings off the Mariner, chopping the nose and tail off as well, and, to the remainder, fitting a hull 15 times as long as its beam, perhaps a little beyond the optimum value, as the internal volume of the hull is reduced after an optimum length-beam ratio of about 12:1.

The hull of this aircraft, the Martin M270, was marked off in white lines, corresponding to those on the tank model; and cinema films of the tank hull and the complete full-size aircraft showed close correspondence between the spray patterns.

Based on these experiments, Glenn Martin produced a flying-boat specially designed for anti-submarine work; provided with rockets, it has a spectacular take-off, partly due to a greatly improved power-weight ratio as compared, for example, with the Short Sunderland.

Two Engines or Four

The Short Sunderland has four engines; long-distance reconnaissance might be carried out by two-engined aircraft such as the Catalina or Marlin, or by four-engined aircraft such as the Convair Tradewind or Short Shetland. The feature of these fine boats of the past and present was their range; about 2,500 miles for the Catalina or Short Sunderland, 4,500 for the Tradewind and 4,650 for the Short Shetland.

It seems possible that in the United States of America operational research, as well as aero-dynamic research, may have been applied to the problem of two engines or four; judging by the weight, the Convair Tradewind might cost twice as much as the Martin Marlin, and therefore take up nearly twice as many man-hours. This is the problem which may have to be solved in this Country, where both money and man-hours are in short supply.

Reduction of Hull Drag

The long series of experiments made by Mr. Ernest Stout of Convair brought him to the conclusion that high-speed, water-based aircraft could not afford to have a step or, at least, a step of the conventional type.

For more than 20 years, flying-boat designers in this Country and in the United States of America have been trying to reduce the head resistance and the aerodynamic drag due to the step. On models of the Short Sunderland, the makers progressively reduced the depth of the step until it was less than one and a half inches; and about the same time, experiments at Felixstowe were made with a step 'faired in.' Instead of the step being approximately at right angles to the line of the hull or the surface of the weight, it was sloped off at various angles, up to a maximum fairing 18 times as long as the step depth. Although this reduced the drag, it increased the time of take-off.

As far back as 1936, Blackburn patented a retractable planing bottom, but with the intention of providing the best angle of incidence of the wings accompanied by the best angle of take-off for the hull; in addition, the propellers were farther out of the water. This aircraft, graceful in appearance and very fast in flight, was before its time. Writing in *The Aeroplane*, a critic suggested that the planing bottom should be turned over during the process of retraction and so provide a smooth underbody without the built-in drag of the conventional step.

Hydrofoils and Blended Hulls

Mr. Ernest Stout, of Convair, went one better than anybody else; developed from thousands of experiments, for flying-boat use he produced a retractable step; and for water-based fighters he developed take-off skis or hydrofoils.

At least two famous British makers had thought of hydrofoils, even before the 1914-18 War. In 1911, the three Short brothers jointly projected a series of vanes or hydrofoils beneath the wings of an aircraft with a single central float, and the full-size aircraft was flown by the then Lieutenant Arthur Longmore, R.N.; in the same year, Commander Dennistoun Burney patented something similar, which he styled

' a water-carriage ' ; it looked like a ladder of small vanes or hydrofoils beneath its wings. During towing tests it took off, but was destroyed in a taxying accident later on.

Mr. Ernest Stout completed his experiments with radio-controlled models, and produced as the result of these tests the Sea Dart, mounted upon skis or hydrofoils instead of floats ; on the water at rest, this aircraft floats with the waves lapping against the ends of the two jet pipes, which, like the air intakes, are provided with specially designed closures. Immediately the aircraft begins to taxi, the hull rises clear of the water until the aircraft is skating across the surface of the sea at little more than 20 knots ; required take-off speed having been obtained, the pilot pulls the stick back until the aircraft is standing on its tail at an angle, momentarily, of nearly 45 degrees. The two large jets blow enormous steam holes in the surface of the sea, and this powerful aircraft then takes off with an excellent rate of climb. During take-off and landing, the spray is turned downwards by a retractable ' spray-dam.' The skis are retracted, leaving a very clean hull ; and are extended again for landing. The landing speed, not publicized, appears to be not unduly high ; taxying speed must be about 30 knots, and with the skis fully extended, the aircraft taxies up the beach or prepared ramp, at nearly 20 m.p.h., running on wheels set in the tail of the skids. For maintenance purposes it is 100 per cent. land-based.

At the speeds at which large flying-boats operate, the loss of fuel due to the drag of wing-tip floats is offset by the loss due to the weight of the retraction mechanism ; and most modern flying-boats have non-retractable wing-tip floats. But at the high speeds of fighter aircraft the drag would be out of the question ; and the wings are so thin that it would be difficult to accommodate the mechanism. The solution put forward by Consolidated Vultee is to extend or blend the lower portion of the hull into the wing roots ; and indeed, English Electric had a flying-boat designed with blending panels a good many years ago. Both of the large flying-boat builders in the United Kingdom have sketch designs in which the hull is blended into the wing root, and a step made retractable.

Advantages of Water-Based Aircraft

Assuming that, as in the U.S.A., high-speed, long-distance flying-boats are available, it is possible to forecast some of their advantages for oversea warfare, as compared with our situation, where most of the air battle will be fought over Western Europe ; for our own Country, this is the strongest argument for land-based, long-range aircraft, transferable where necessary from night bombing duties to anti-submarine search and destruction. But we may yet see water-based fighters operating over a hostile land-mass, where they would never need to alight.

Without this argument, the flying-boat might be the better, even over the Atlantic, but this is for an operational research team to decide.

The United States Navy is firm in its belief that the best way of rescuing shipwrecked mariners or ditched aircrews is to alight on the water and pick them up. On our side, rescues have been made which live in history : 34 of the crew of the *Kensington Court* ; hundreds of Chindits from a lake in Burma ; hundreds of men from Crete, including 87 in a single load ; and, more recently, evacuation of scientists from Greenland, and casualties after earthquakes in the Ionian Islands.

The alternative to alighting on the sea is to warn the nearest vessel or drop rubber dinghies, or the Saunders-Roe lifeboat. These three alternatives would

expose the shipwrecked crew to destruction by the enemy submarine commander by machine-gun fire after a land-based aircraft has gone home.

Operational Research and Anti-Submarine Warfare

It has been stated earlier that operational research saved hundreds of ships, thousands of lives, and millions of pounds. Yet the changes made by Professor Blackett's team at Coastal Command were very slight: black Whitleys were camouflaged white, setting of depth charges altered from 100 feet to 25 feet, convoys doubled or trebled in size with a great reduction in sinkings. When aircraft were employed on bombing Berlin, it was calculated that each raid resulted in the destruction of one dozen houses and perhaps as many Berliners; but each corresponding flight on escort duty saved one-third of a ship. In 40 sorties, the then life of a long-range aircraft, 13 ships were saved. In view of the high cost of building escort vessels, we should remember that eight hours air cover a day reduces the need for such protection by about 50 per cent.

The tactics of anti-submarine warfare were modified as the result of the recommendations of the Coastal Command operational research team; few of them would remember the posters used in France by the Royal Flying Corps, reading "Beware of the Hun in the sun"; but they introduced a profitable down-sun attack, which, combined with camouflage, increased by about 30 per cent. the number of submarines sunk. Other factors were found to increase the rate of sinking. On his side of the aircraft, the pilot saw twice as many submarines as anybody else; and this should lead to all-round view-points, corresponding to the large blisters on the Catalina—not quite so practicable now that speeds are twice as high. The Catalina crew, with no reserve or relief, became fatigued on 20-hour patrols; this reduced their efficiency of sighting by about 60 per cent.; in the Sunderland, a much larger aircraft, there was a relief crew, bunks for those who wished to sleep, hot meals as required, ample room to move about or do physical jerks, and permission to smoke.

The Martin Marlin carries into the present day all the results of operational research on both sides of the Atlantic. It has two crews or watches, 10 tons of fuel for its two engines, and a range of 3,600 miles.

On the wing it carries a 75 million candlepower searchlight, able to show up a submarine at two miles range; its dish antenna in the nose is five and one half feet in diameter, the largest airborne antenna in the world; search electronics weigh over a ton, and cost $125,000. Bombs, torpedoes, or depth charges are carried under the engine nacelles; and it would seem possible, if necessary, to attach also under-wing containers. The Marlin would be suited to alighting on the water for air-sea rescue purposes; or could gently lower a torpedo with an atomic warhead; or, equally gently, slip into the sea one or more midget submarines: mines might be laid, in a swept channel, more accurately than at speed. Pilots may not like to throw atomic mines or torpedoes into the sea at 100 miles an hour.

Such flying-boats can be maintained at an advanced base by means of airborne pontoons; the Princess could carry a complete floating dock of Saunders-Roe airborne pontoons, together with the crew to install and maintain them. The United States Navy has a similar technique, combined with maintenance devices such as self-propelled beaching chassis and high-speed electric winches.

Modern flying-boats are equipped with central high-pressure refuelling points, and with compound engines or gas turbines can use fuel much less inflammable than petrol.

At one time, pilots felt that refuelling in the air, after a long flight, may have been a strain.

Anti-Submarine War in the Caribbean

Both Convair high-speed fighters and long-range flying-boats have been specified by the United States Navy for operation " for protracted periods from an advanced base." They are very expensive aircraft ; and it may be, for poor relations such as ourselves, that we could save man-hours and money by using a technique invented long ago by Short Brothers.

With coral island bases, landing strips might be impossible ; one could not keep an expensive vessel such as an escort carrier permanently parked in every lagoon ; and the alternative might be to have the inexpensive Short Seamew mounted on a central float in some similar manner to their Gurnard ; the minimum amount of men and maintenance equipment should keep a flight, or even a swarm, in good order.

At a time when one 12,000-ton tanker a day was being lost in the Caribbean, with its precious oil and still more precious crew, the United States Navy suddenly saturated the lagoons with water-based aircraft of various types ; and almost immediately overcame the greatest effort which enemy submarines had ever put forward in any sea other than our home waters and the Atlantic.

Atomic development moves more rapidly every day ; and it may not therefore be too early for the consideration, by scientists in conjunction with the Services, of the tactics of anti-submarine warfare in perhaps 10 years from now. Whether war should break out within that period or not, there will still be plenty of problems of nuclear propulsion ; though prototypes of nuclear-propelled aircraft might well be land-planes, the questions of runways, noise, and radio-active dust may result in a return to fast flying-boats of the new type.

Operational Research in War or Peace

Questions such as these would warrant the setting up of a permanent ' composite brain ' on the lines of the operational research teams which proved so successful both here and in the United States of America during the 1939–45 War. One of the important features of these was their variety : thus, a team might consist of not more than a dozen scientists, including, one of each, a mathematician, atomic physicist, production engineer, aerodynamicist, electronic expert, social scientist, economist, cost controller, psychologist, and a publicity expert to translate the recommendations of the experts into the language of the Service.

Plenty of composite brains have proved themselves : Battelle Memorial at Columbus, Ohio, has 2,000 scientists ; Dow Chemicals forms one of five groups of firms set up by the Atomic Energy Commission in the United States of America, and is the parent firm of a group of 28 others, represented largely by business men. In this Country, there are a number of management research groups ; while operations research teams, much smaller than the one proposed above, are used by the Road Board, the Coal Board, the Cotton industry, and the Boot and Shoe industry ; in I.C.I., operational research has developed into work study, and must save at least £2,000,000 per annum ; the firm employs 1,000 experts on this work.

In peace or war, the energies of one small team of scientists such as this, advising the airframe industry as a whole, could reduce the costs and increase the sales of the

more important types of airframe ; as well as providing an answer to the two questions which must be left hanging in the air :—

(i) If war should come, would flying-boat or land-plane be the best for an attack on enemy submarines, or air-sea rescue ?

(ii) Should development of nuclear propulsion be in the direction of water-based or land-based aircraft ?

DISCUSSION

GROUP CAPTAIN P. A. LOMBARD : You did not mention the actual possibility (I am talking as a member of Coastal Command) of the flying-boat being able to carry the latest equipment necessary to kill a submarine. I think it is generally appreciated that the land machine can do so, or will be able to do so very shortly. Unfortunately, I would say personally, we have not a flying-boat yet that could do it.

THE LECTURER : I hold no views as to whether we should be building flying-boats or whether we should not, but the United States is building one or two fine aircraft which we might have to get by lend-lease. We could always say to ourselves, " We do not make any aircraft like this, but the kind Americans will come to our aid and supply us with Marlins when the time comes."

As regards armaments, the Marlin has very large containers under the engines which would take two torpedoes, or two 2,000-lb. bombs, or an assortment of offensive weapons. It might be possible to carry one or more additional containers on each wing, with the containers droppable, followed by the bomb or torpedo. But in this Country we have done no research on that type of armament, or into an offensive form of flying-boat. There are plenty of projects on the drawing-boards, but no more than that.

LIEUT.-COLONEL L. V. S. BLACKER : The speaker has emphasized the necessity and value of operational research, and I am sure no one will venture to disagree. But I am tempted to ask whether we have gone into the matter sufficiently fundamentally and have not been too pusillanimous to go right down to the root of it.

A war, Clausewitz and Napoleon would point out, is a balance between attack and defence. How much are we passively defending ourselves in the defence of the Merchant Navy and how much are we devoting to knocking the enemy out ?

For instance, surely one cannot think about operational defence of these islands and the defence of seaborne trade without considering the excessive population. We are spending fantastic sums on a more or less passive defence, largely in order to maintain a population which is obviously excessive ; which everybody in the three Services must regard as excessive, only the politicians are terrified of saying so.

Every problem can be solved by thinking about it hard enough. I firmly believe that the excessive population problem of this Country could be solved. We have millions too many in this Country and millions too few in Canada, Australia, Rhodesia, New Zealand, and elsewhere. In other words, we are presenting far too large a target to the enemy. Why do not we think how we can spend some of our money on reducing the target and thereby freeing our hands for the counter-attack ?

A large proportion of our seaborne trade consists in the importation of raw materials to manufacture odds and ends, mousetraps and so on, in this Country which could be manufactured quite well, or even better, in Canada, Australia, or South Africa. That is one query on which I should like to hear the lecturer's reply.

The second is what are the pros and cons of the defence of seaborne trade by long-range flying-boats on the one hand and against the use of rotating wing aircraft from the ships of the merchant convoys themselves against submarines on the other hand ? In other words, is it more profitable to defend seaborne trade by flying-boats which had a very effective sphere and a very efficient way of doing it in the past, or is the use of rotating

wing aircraft, flying off from the merchant ships themselves, as good, or not so good, or better ? Of course, there is always the possibility of the flying-boat itself carrying a small rotating wing aircraft for the counter-attack.

THE LECTURER : Thank you very much for your remarks. Some of them I will not answer. I cannot say whether we should reduce our population in order also to reduce our orders for flying-boats. It is true that it would work that way.

If I might go on to the question of the balance between attack and defence, there is necessarily a time when a boxer covers up. In the middle of the Battle of the Atlantic we had to cover up. We had to withdraw aircraft from the bombing of Berlin in order that long-range aircraft might work with our convoys. It was well worth while. The operational research people knew how much damage was done by every bomber that went to Berlin. At least, they could get a very close estimate. It was estimated that in the big raids the average bomber destroyed a dozen to 20 houses and a dozen to 20 Berliners. If you were to withdraw that particular bomber and do without your dozen to 20 houses destroyed you could save one ship in every three sorties. In the life of a Liberator, for example, which was put at 40 sorties, 13 vessels were saved. At a time when we could not build enough ships, and the Americans could not either, it was found that air cover for eight hours a day enabled us to reduce the number of escort vessels—which might be 12 or 20 with a big convoy—by 50 per cent. ; so air cover is more desirable than escort vessels.

Lastly, helicopters, being air cover, are ideal for protecting a convoy, if by protection you mean in its immediate vicinity. But anti-submarine search means finding a submarine 200 miles before it finds the convoy. That is why the ocean must be planned out into areas which are quartered by long-range aircraft flying every so often over the same water, so that if the submarine emerges there is a good chance of its being sighted by the appropriate number of qualified, trained, and unfatigued eyes.

Nowadays, sighting is going to be a matter of a radar screen, instead of looking down and finding the submarine. You want unfatigued eyes on your screen ; the Short SB3 was able to carry three crews of radar watchers, so that they could take their place in rotation and always be fresh. What we have to remember is that fresh crews find 60 per cent. more targets than those that are not fresh.

I am for helicopters for local defence, and long-range aircraft, land-based or water-based, for seeking out the submarine and destroying it. It is my contention that when the crews of vessels are put down in the sea they should be picked up, and the land-plane cannot pick them up. The Americans have developed helicopters for offensive work of a particular kind. It must be obvious to us that when you have an atomic shell which is only a foot in diameter by four feet long, it could be carried in the nose of a torpedo. You might go a step further and make the torpedo long-range, 10 to 15 miles, and homing. All of us know a lot about homing missiles nowadays, the Americans more than we do. But you must prevent the homing torpedo from coming back and attacking its parent, as unfortunately happened in an early all-rocket, electronically controlled fighter.

The Americans thought it would be a good thing to have a water-based helicopter which would not, as an aircraft might, fling out an atomic torpedo from 50 feet above the water at 180 miles an hour, but would lay it very gently. They would set the controls, push it off in the direction they wanted it to go, and take to the air quickly before it could come back and bite them. That is the helicopter technique of the days to come. There is no reason why helicopters should not be developed for convoy work. In the U.S.A., they have the Hughes helicopter, which was specially built to lift bridge sections weighing 10 tons each and was driven by two 3,000 h.p. engines. That is a practicable and easy development. Have I covered your point ?

LIEUT.-COLONEL L. V. S. BLACKER : The carriage of a rotating wing aircraft on the flying-boat ?

THE LECTURER: That is quite possible, just like Short's Mercury carried on the flying-boat Maia.

LIEUT.-COLONEL L. V. S. BLACKER: Then as regards the balance of offensive and defensive war, there are surely more efficient methods of using your air power against enemy targets than by blowing up 10 or 12 civilian houses per bomb.

THE LECTURER: That is what the operational research team said. They thought it better to keep the submarines at bay in the Atlantic instead of destroying a few slum dwellings in Berlin.

AIR VICE-MARSHAL C. E. CHILTON: Your interesting lecture was called "Military Applications of Water-Based Aircraft," and you ended it by throwing out two questions which it would seem that you are asking us to answer. I was hoping you were going to give us a glimpse of the future of the military applications of flying-boats rather than an interesting review of the past. We so frequently hear it said that we are so busy fighting the last war that we shall lose the next one by not being ready for it. This is much truer than a lot of people realize. Time and time again, I noticed, you referred in this lecture to "looking out for submarines." I have spent a great deal of time looking for submarines both in peace and war. I have not yet seen a submarine, as it were, during war conditions though I have searched diligently by eye and by radar. The submarine of the future is going to be a great deal more difficult to find than a lot of people realize. It may not even show itself at all. The first thing we will know of its presence is that a dozen ships in the convoy will be sunk on one side, and then it will vanish under the convoy at high speed, appear at the other side, and sink another dozen. Therefore, I should not rely too much on the value of optical viewing, and valuable as the radar screen is, we must find some better way of finding and killing submarines.

Returning now to the flying-boat—there are all sorts of applications which may come to the fore in the future. It is within the realms of possibility that a flying-boat may be devised that is capable of sitting out on the sea in the Atlantic and lowering its own asdic device. That is the sort of thing we have to look for. We have to get away from the old concept of flying round the convoy. It is also important to understand that in the air there is not much to choose between the land-plane and the sea-plane. In the air, they are more or less the same vehicle. We have to evaluate other advantages if we are to get down to which is the better vehicle for anti-submarine work, and if a flying-boat can be refuelled at sea—and can land and take off in mid-Atlantic—then we may have produced something really valuable.

You said that the operational research boys had broken the back of the Battle of the Atlantic in various ways, but it was, in fact, the Liberators of No. 120 Squadron which turned the scale with their valuable air cover in mid-Atlantic, and they happened to be land-based planes. I do not say they were any better one way or the other. If the flying-boat squadrons had had the necessary endurance to remain in the middle of the Atlantic at that time, they would probably have achieved the same results.

There are a few other points of detail that I should like to mention. You said some black Whitleys of Bomber Command were flown in the Battle of the Atlantic and that it would have been much better if they had been white Whitleys. You specifically said they had been taken off the bombing of Berlin, the implication being that they were better employed in the Atlantic. I think this is a dangerous philosophy, because, in fact, they were probably taken off the bombing of U-boat components or U-boats building on the slipways. If you take them away from strategical bombing today, a completed U-boat might appear in the Atlantic tomorrow.

Coming back to the excellent slides you displayed, I noticed that without exception they showed water conditions which all flying-boat pilots would describe as ideal. This is a pity and apt to be misleading as the sea can be very rough and present-day development is better able to meet those conditions.

On refuelling in the air, you said you were told it was rather a strain on pilots. I have recently refuelled in the air at high speed—admittedly in an American aircraft refuelling from another American aircraft, but using, fortunately, a British system. It was the simplest operation I have ever undertaken in my life, so that is a bogy we can dismiss.

THE LECTURER: It is a privilege to hear your views, especially in view of your experience. I extracted opinions about refuelling in the air from Air Vice-Marshal Mackworth's lecture at which you were in the Chair. Is that right?

AIR VICE-MARSHAL C. E. CHILTON: No. I was very close to the Chair.

THE LECTURER: Either he or one of the speakers said, I think, that he regarded it as a strain on pilots. We may come down to regular air-refuelling of flying-boats, or whatever aircraft is going to do anti-submarine patrol, instead of their having to go a thousand miles out and a thousand miles back in order to get to and from their area.

Your questions come well within my guard. May I take it a little slowly in talking about them?

I would be for refuelling in the air if the people who have to do it will put up with it as a technique and do not find it too much of a fatigue.

About these ideal conditions a great deal could be said. Flying-boat people do not like waves 10 feet high, but aircraft will live in them, as we all know. What I am saying is this: the work of the operations research team should be directed not so much towards settling minor questions of tactics as towards advising whether or not boats, built either as models or full size, can be built to withstand rough weather. There never will be the kind of weather everybody will like all the year round, but the operations research team could determine how often bad weather occurs in the Atlantic or whatever sea we are thinking about, and whether the flying-boat which is going to sit on the water part of the time is the answer, or whether they think land-based aircraft which do not sit on the water at all would be better.

From something else you said, I gather there is a possibility that if a flying-boat were to weigh 400 tons and be atomically driven, it would not need to sit on the water at all. But for ten years we have to put up with some form of refuelling. Was it not in your own lecture that you referred to Air Commodore "Kelly" Barnes sitting out for seven days in a calm patch of the Atlantic, rather than go home and have to come back the same way?

AIR VICE-MARSHAL C. E. CHILTON: No. There were very special conditions about that particular operation and therefore it could not be regarded as a normal practice.

THE LECTURER: I understood it was a very calm patch and he did not want to come home and waste fuel and time. Where possible I would favour refuelling at sea.

A long time ago—certainly 20 years—some inventor whose name I have forgotten took great pains to invent and demonstrate a seaborne land-aerodrome; that is, it was a sort of vast Mulberry floating on the surface of the sea, linked loosely so that it would not crack apart when heavy seas might attack it. There may be something in that, with a considerable lee under which flying-boats could come in order to take in their fuel as distinct from having to have a very long floating runway for land aircraft on Atlantic patrol.

At one time, we were really bothered about the possibility of submarines entering the Straits of Gibraltar just before the North African landings and, if my American information was right, it was their aircraft that saved us from that embarrassment.

They were using the magnetic airborne detector, and they flew a constant patrol back and forth and succeeded in closing the gap, so to speak, to the enemy submarines. It seems to me that either our electronic research people or our operations research teams or both, must get down to the technique of finding a submarine under the water at any reasonable depth to which submarines will go. That is the problem of the future. It may

be worth spending £50,000 now to find the answer, rather than sitting still and waiting until atomic submarines do appear, as they will some time inside the next 10 or 15 years. The Americans have them now. Why should not the Russians have them in 12 years from now ?

I appreciate the difficulty of finding a submarine which apparently need never come to the surface. I am all for having flying-boats sitting on the sea and protecting a convoy by doing so with, if you like, a linked series of little electronic stations miles along a floating cable. There are ways of doing it. You could have a towed cable several miles long. A team of experts could, I feel sure, overcome this problem of the submarine that never rises, but it is not for me to propose a method here. It is for somebody to pay £50,000 to get the right answer. Have I answered your points ?

AIR VICE-MARSHAL C. E. CHILTON : It would be cheap at that price if we could do it and, I assure you, we are looking forward to some new ideas for finding modern submarines at sea.

THE LECTURER : That is the annual scale of expenditure on a top-flight operations research team of assorted scientists.

AIR VICE-MARSHAL C. E. CHILTON : I am reasonably certain that more than half a million has been spent on various devices already. You mentioned the magnetic airborne detector. It has one fundamental snag apart from other limitations. I cannot give precise figures, but it can only measure, as it were, a certain distance. If you are, say, 200 feet above the surface of the water, it can only measure 200 feet below. If you go down to 60 feet it can still only measure 340 feet below the sea. But even now submarines are capable of going outside this range, and you can dismiss that device as a certain solution to our problems. You will have to think of something quite new, either some form of device that looks through the water or some other detection device. Money is indeed required, but the money is there ; it only needs the scientists to give us the answer. To kill submarines is a team job—co-operation between ship and aircraft, and both require first-class equipment and highly trained personnel to operate them.

THE LECTURER : Although a lot of money has been spent, it might not necessarily have been spent on the right lines. The very highest quality of scientific research is no better than is necessary, and by the world's greatest scientists. You might have to employ them part-time and to spend £50,000 or £100,000 a year on a dozen of them. But that is the way to do it—to make expenditure on high quality research rather than on development by people like ourselves, Service engineers, radar or otherwise.

Last September, Lockheed produced a modified Neptune, P2V-5, with greatly increased search radar, to " seek out and localize enemy submarines lurking *hundreds of feet* beneath the ocean's surface." They also have an early-warning Constellation with six tons of radar, and a crew of 31, including relief pilots, radar officers, technicians, and maintenance specialists. Six tons of radar, costing, say, £200,000, might be applied to detecting submarines hundreds of feet deep. I can imagine less expensive devices.

Thank you very much for your criticism. It was most helpful.

MR. PETER CREWE : May I say how much I have appreciated your very comprehensive talk on the subject of water-based aircraft ? I am sure its stimulating ideas will give rise to a great deal of discussion and some disagreement. There are one or two points on which I should like to ask questions and also express some disagreement, although in the main I most heartily agree with your remarks.

There is one point in particular. You spoke of the American aircraft, the Marlin, an aircraft of—I think—about 70,000 lb. all-up weight. You suggested that such a size is the best for a maritime reconnaissance flying-boat. Do you consider that an aircraft of that size could, in fact, carry a double crew and a double war load ? Could it, at the same time, carry sufficient fuel for a very long range ?

Investigations which I know to have been carried out in this Country indicate that an aircraft of about twice the Marlin size would be much more adequate ; for instance, the Short-Saro Shetland at some 125,000 lb. all-up weight had a range of about 4,560 miles, whereas the corresponding figure for the Marlin is only 3,600 miles. It is my understanding that even the latter was only obtained by carrying fuel in lieu of war load. I should like to suggest, therefore, that a four-engined aircraft would be more suitable.

There is another point about this. The larger flying-boat is more seaworthy. The Americans have the Grumman Albatross air-sea rescue aircraft of about 30,000 lb. all-up weight. But in practice, I understand, they are using the Marlin, which is twice the size, because it is more seaworthy. An aircraft twice that size again would, one supposes, be more seaworthy still. In fact, this leads me to a point I should like to stress strongly.

You have been talking about research that might be done and the investigations that could be made by an operations research group. It is my understanding that a great deal of work on modern water-based aircraft is already being done in this Country at present, but unfortunately it is not widely known.

If I may recall how this story of modern flying-boat development started, my memory —though I was very young at the time—is that, in 1936, Mr. Coombes of the Royal Aircraft Establishment wrote a paper concerning a family of hulls of varying length to beam ratio. That work does not seem to have attracted much attention, but coincidentally, in Germany, an investigation was begun on long, narrow hulls, based on seaplane float forms, and went on during the period of the 1939–45 War.[1] When the war was over, Mr. Stout, of Consolidated Vultee, of whom you have spoken, made a tour of relevant German research institutions. After he returned to America they undertook a programme of research into long, narrow hulls which has now culminated in the production of project designs and actual hardware aircraft. Some which have not been mentioned today will be flying in the fairly near future.

In this Country, both privately and in Government establishments, a parallel programme of work on hull forms, aircraft supported on hydroskis, and allied topics has been undertaken. In a number of visits to the United States, where I have discussed technical matters with American hydrodynamicists, I have discovered that the two countries are running neck and neck, and in some cases we appear to have gained a lead. However, unfortunately, we have not been able to build the aircraft.

If I could give an example, there is a projected aircraft about twice the size of the Marlin, which has been designed for operation in very severe sea conditions. Extensive model tests have been made privately in Britain in both towing and free landing tanks and by means of liquid rocket propelled free-flying models. I understand that these tests have demonstrated the practicability of producing a flying-boat that can land in the open ocean, under the conditions appropriate to a future national emergency, for at least 80 per cent. of the year. A flying-boat which can land in the open ocean can refuel from a ship, with great operational advantage.

Take a particular tactical situation concerning the protection of a convoy. Calculation has shown that, whereas by the old method of going out from a land base six Sunderlands would be required to protect such a convoy, only two aircraft landing and refuelling at sea would be necessary. Again, a high subsonic bomber, of relatively short range, could be refuelled at sea *en route* to its target.

This is not the whole extent of the work that has been done in this Country. Investigations are also being made on hydroski aircraft. The Saunders-Roe aircraft with a retractable planing bottom has been mentioned already this afternoon. Other investigations have been made into hydrofoils, but not necessarily in connection with flying-boats.

[1] Both these sources of hull-research information were generously referred to by Mr. Stout in various papers, and also by *Aero Digest* in articles on the Convair Tradewind and Martin Marlin.

I feel, therefore, that the discussions this afternoon are not as theoretical as might at first appear. In fact, a great number of the problems have already been solved, and it is known pretty well what to do if hardware aircraft are asked for in the near future. What is required, as you have already said, is an official operations team to investigate exactly where, in the general strategy, such aircraft will be needed.

THE LECTURER: Thank you for your very valuable contribution. Time is getting short, so I will not go into it at great length, but I am tremendously interested and pleased to hear that you are carrying on research of the kind that I suggest.

I sometimes feel that if we are ever going to build flying-boats of the new breed to which you referred, we might want the co-operation of the whole of the airframe industry. Operations research should apply not only to tactics. It ought to be applied, and is not, to aircraft production, by which I mean production by the aircraft industry as a whole.

The chief reason for my saying that the Marlin is a suitable boat is that it has two engines; you said—probably with reason—that four would be better, and that may be so. But the four engined aircraft will cost twice as much, I suppose, and, what is more, will cost twice as many man-hours if it has to be built in a small country which cannot afford either the man-hours or the money.

My contention is, not that I prefer two or four engines, but that someone should determine whether economic analysis would show that the four-engined aircraft is, in the long run, the more economical in production man-hours. I agree with you about a larger boat being more seaworthy; and an aircraft twice the size, like the Shetland or whatever you have in view, would be a good flying-boat for all-weather anti-submarine warfare. But would twice as many Marlins, costing the same amount in total, be worse or better than the smaller number of larger aircraft?

THE CHAIRMAN: It would be beyond my ability to make any summing up, but I should like to ask you to join me in thanking the lecturer for his excellent lecture and the gentlemen in the audience who have so kindly contributed to the discussion. (*Applause.*)

PARIS, 1870 AND 1940: A COMPARISON

By "MUSKETEER"

"HISTORY has a tendency to repeat itself, though no one military operation is a blueprint for another."[1] The armament and equipment of the armies of 1870 naturally differed from those of 1940, but comparison of these campaigns indicates that the fundamental principles of war remain constant and that the experience of old wars should receive attention. The Germans' rapid and startling success in both campaigns was due to similar reasons, though in one respect the campaigns differ. In 1870, France rose to the occasion; in 1940 her national morale was not so high as in 1914.

The similarities may be summarized as follows:—

(*a*) Both German plans aimed at the rapid destruction of the enemy forces.

(*b*) In each case the French initial concentration was faulty.

(*c*) The French were on the defensive in 1870 and 1940. Their tactical ideas were unsound in each case, as was their use of fortresses.

(*d*) The Germans achieved surprise in 1870 and 1940.

(*e*) In both campaigns the Germans were fighting on a single front.

(*f*) Both in 1870 and 1940, the French Army was popularly supposed to be the best in the world.

(*g*) The German command, training, organization, and mobility proved superior in both cases.

(*h*) In 1870, the German artillery equipment was superior to the French, but they had the better rifle. In 1940, the German air force and anti-aircraft artillery was superior in every respect.

The following outline of decisions and events, together with some reflections, are designed to amplify the above summary and to serve as an introduction to a more detailed comparison. The timings, given in an appendix, and including those of the *Vormarsch* of 1914, are of considerable interest.

1870: MOBILIZATION AND DEPLOYMENT

Mobilization was ordered in France on 15th July, four days before the formal declaration of war. Napoleon, hoping to compensate for his inferiority in numbers by rapidity of movement and skilful strategy, intended to cross the Rhine and thrust between north and south Germany. He ordered the Army to assemble in Alsace-Lorraine without waiting to mobilize, confidently expecting to be in a position to cross the frontier on 31st July. The right wing, two corps under Marshal MacMahon, assembled between Belfort and Strasbourg, separated by some 60 miles and the Vosges from the left wing in Lorraine, consisting of four corps under Marshal Bazaine. The Imperial Guard, and a corps concentrating at Chalons, constituted a reserve under the Emperor as Commander-in-Chief. On 21st July, French detachments began to move towards the Saar, drove the German covering troops back over the river at Saarbrucken on 2nd August, then halted.

As early as 29th July, however, it became apparent to the marshals that the army was not capable of forward movement. From the outset there had been *désordre formidable* and neither the reservists nor the equipment necessary to complete

[1] See *Moscow, 1812 and 1941: A Comparison*, R.U.S.I. JOURNAL, November, 1952

the units had arrived. But, although the offensive had to be abandoned, no alternative plan was adopted nor were the cavalry deployed for reconnaissance. Thus, from the end of July until 6th August, the weaker French Army remained dispersed from Belfort to Thionville—some 200 miles—without reliable information of its opponent.[2] On 4th August, an isolated division of MacMahon's was crushed at the little frontier town of Weissemberg in Alsace.

Von Moltke intended to attack and destroy the enemy's main forces as soon as possible. Every detail of mobilization, supply, road, and rail movements had been worked out and checked each year, including alternative arrangements for detraining. The concentration area selected for the three German armies was the Palatinate, the right flank resting on neutral territory, with covering forces on the River Saar to Saarbrucken and thence along the frontier to Lauterberg. Though the possibility of a French offensive before the completion of the concentration on the 20th day of mobilization had to be contemplated, all available formations were to be assembled in the Palatinate, the Baden frontier being merely watched. Should the French cross into Baden, a counter-offensive could be mounted from the north on either or both banks of the Rhine.

German mobilization, commenced on 16th July in their peacetime garrisons, was completed as planned, and rail movements started on 24th July. By 29th July, the greater part of the armies had assembled: First, about Coblenz; Second, Mainz-Mannheim; and Third, Landau-Karlsruhe. Owing to the French advance to the Saar, the Second Army was detrained on the Rhine, as provided for in the alternative timetables, instead of near the frontier. In spite of this change, the Army lost only two days and there was no confusion. The concentration and advance to the frontier had been pre-ordained in every detail; the decision how to achieve the object would be made when the hour came.

Elimination of the French Left Wing

On 6th August, leading elements of First and Second Armies attacked and defeated a forward corps of the French left wing at Spicheren; on the same day, the Third attacked and shattered part of the right wing at Werth in Alsace. After these encounter battles, which demonstrated the superior training of the Germans, their three armies formed a compact, deep mass. The First and Second together had a front of only 24 miles, while 29 miles from their left flank stood the Third, assembled about Werth. On the other hand, the French dispersion had increased, part of the right wing retired via Saverne and Saarburg in disorder, part withdrew to Belfort and thence by rail to Rheims, intending to concentrate at Chalons. The left wing withdrew towards Metz and, by 10th August, had occupied a position on the French Nied, east of the fortress. This was found unsuitable and a move nearer to Metz took place. Then, late on 12th August, Napoleon handed over to Bazaine and ordered retirement to Verdun, but no move took place until 14th August.

The German main bodies began to move fully deployed on 9th August, wheeling on the right so that all three armies faced west, the Third being on the left. On 13th August, Pont-a-Mousson was secured and the railway Chalons-Metz denied to the French. The First and part of the Second Army fought the action of Colombey-

[2] French 230,000, Germans 380,000, rising to over 400,000. The French corps consisted of three or four divisions and a cavalry division, the German invariably of two, their cavalry divisions being independent.

Nouilly on 14th August, which caused the French movement through Metz to be halted. The Third Army reached Nancy and, by the 16th, had occupied Bayon on the Moselle, south of that city. Meanwhile, Moltke made his first big decision.

The Second Army, crossing to the west bank of the Moselle above Metz, turned north, fought the battle of Vionville-Mars la Tour on 16th August, and commenced to close the western exits of the fortress. Some, at least, of the French formations could still have escaped to the north-west had there been decisive command and good staff work, but for days intense confusion had reigned in Metz. As it was, the Germans swung round, facing north-east, and won the first major battle of the war at Gravelotte-St. Privat on 18th August, after which the French, who had fought well, retired into the fortress.

Sedan: Moltke's Triumph

Seven corps and two cavalry divisions of the First and Second Armies were left to contain Metz. The residue became a new formation—the Army of the Meuse. Meanwhile, the French had gathered what was left to them at Chalons under MacMahon, consisting of his two original corps from Alsace, one from the left wing and one new corps. He intended to move on Verdun, but the advance of the German Third Army caused him to contemplate withdrawal to cover Paris. Then reports indicated that Bazaine hoped to break out in a northerly direction, and MacMahon, under pressure, moved north-east towards Montmedy on 23rd August. The march was made in great confusion, the supply system broke down, and on 26th August, the Army was only some 15 miles east of Rethel. On this day an unsuccessful sortie was made from Metz—the first time the French took the offensive.

The Germans had been moving steadily westward on a wide front. On 26th August, the Third Army commenced to wheel north-west and the Meuse Army[8] started to move up the west bank of the Meuse north of Verdun, while two corps from the force containing Metz were assembled in positions of readiness west of the fortress. Moltke had made his second big decision.

Once more MacMahon changed his mind, determined on retreat, issued orders to this effect on the evening of 27th August, and reported his intention to Paris. But, after receiving a peremptory order to relieve Metz, he directed his formations to concentrate on the east bank of the Meuse. These changes of plan caused dismay, disorder, and much hardship to the troops. There were also many false alarms. Surprised and defeated at Beaumont, on 30th August, the weary army struggled towards the small fortress of Sedan, close to the Belgian border. Here, encircled by the two German armies on 1st September, their position was quite hopeless and, after a gallant resistance, 104,000 Frenchmen laid down their arms next day.

On to Paris

No time was lost after Sedan. By 10th August, the Meuse and Third Armies, now only 150,000 strong, reached the line Laon-Chateau Thierry-Sezanne. A week later they were on the Seine, and the investment of Paris may be said to have begun on 19th September (D+44). Little resistance was encountered, though *franc-tireurs* were active against small detachments.

The French had been making frantic efforts to raise a new army; the Paris garrison alone was 300,000 strong, far larger than the investing forces. Moltke did

[8] Third Army, five corps, one division, and two and a half cavalry divsions. Meuse Army, three corps and four cavalry divisions.

not anticipate that Paris would resist for long but, even after the surrender of Metz on 27th October, French determination remained firm. Their new forces were no match for the Germans even in vastly superior numbers, but the war dragged on until the New Year. The Germans found they were fighting a nation instead of an army, a fact which disturbed Moltke, who considered it wrong to lead whole peoples against each other.

1940: French Deployment and Plans

In 1939-40, the French deliberately adopted the defensive in both strategy and tactics; their forces were deployed on a continuous front along the frontier from the Alpes Maritimes to the Pas de Calais. In the south-east stood the 3rd Army Group of 36 divisions; the 2nd, in and behind the Maginot Line, had 26 divisions, including nine active and 13 fortress divisions: the 1st, deployed from Longwy to the Channel, had 40 divisions, of which 10 were active, including three light mechanized divisions. Some 32 divisions, including four armoured, were earmarked as reserves and distributed behind the front in little packets without reference to the potentialities of the Maginot Line or to a possible counter-offensive in any particular sector. Opposite Belgium were only eight of the divisions so earmarked. In effect the vital left wing had 40 per cent. of the available formations of all types; the remainder were deployed in the south-east or tied up in and behind the Maginot Line.

Nevertheless, the French Command anticipated that, if the Germans took the offensive, they would adopt some variation of Schlieffen's plan for 1914. Their counter to this was the unfortunate Plan D, which provided for a move into Belgium and Holland from the north-east frontier by the B.E.F., the First, Seventh, and part of the Ninth Armies of 1st Army Group, pivoting on Mézières. This advance, however, was not to be the prelude to an offensive but to occupy a position: Montmédy-Mézières-Namur-Wavre-Louvain-Antwerp, with a possible overlap into Holland.

On the right of 1st Army Group's sector stood the Second Army, part in the Maginot Line proper from Longwy to Montmédy, the remainder in the improvised extension as far as Sedan, whence formations of the Ninth Army held the defences to Mézières. The remainder of this Army's front south of Namur would be occupied in accordance with Plan D, but here no works existed. The composition of these two armies should be noted. The Second consisted of two cavalry divisions and a brigade, two active infantry divisions, one Series A and two Series B reserve infantry divisions.[4] The Ninth, with a front of some 65 miles, had two cavalry divisions and a brigade, two active infantry divisions, two Series A and three Series B infantry divisions.

1940: Plan for a *Blitzkrieg*

The Germans, whose object was to attack and destroy the opposing forces as quickly as possible, originally intended to follow Schlieffen's old plan. Late in 1939, von Rundstedt proposed an offensive through the Ardennes; this, with the necessary modification of the first plan, was adopted early in 1940. The method thus became: to invade Holland and Belgium and, at the same time, make the main effort between Namur and Sedan.

The Germans concentrated about 140 divisions in the west. Army Group B, of two armies consisting of 25 infantry and three armoured divisions, deployed opposite

[4] Series A divisions were considered almost as good as the active divisions. Series B were of poor quality and badly equipped, especially in anti-tank and anti-aircraft guns.

Holland and as far south as Aachen. The task of this group was to overrun Holland and break through the Belgian fortified area as quickly as possible. Army Group A, deployed between Aachen and the River Moselle, had 44 infantry and seven armoured divisions, organized in four armies. This group's main blow was to be made on the front Montherme-Sedan with five armoured and three motorized divisions, the left flank being protected by the Sixteenth Army. As a subsidiary and protective effort, two more armoured divisions would move through the northern Ardennes and cross the Meuse between Namur and Dinant. Army Group C, of 17 infantry divisions, was detailed to hold the rest of the front and contain the forces in the Maginot Line. In addition 45 infantry divisions were held in reserve behind Army Groups A and B.

1940: Elimination of the Allied Left Wing

Late on 9th May, the Germans began to move. Preceded by air attacks and airborne landings, the columns of Army Groups A and B crossed the frontiers early next morning. Plan D was put into operation by the Allies and the position was occupied by 12th May. But, at the outset, the Belgians' frontier positions were disrupted and, by 14th May, Holland was overrun. On 16th May, the Allies in Belgium were ordered to withdraw, the reason being that the right wing of the French First Army, which fought brilliantly, was in the air. The hinge south of Namur, on which Plan D depended, had broken.

On 10th May, the cavalry of the Second and Ninth French Armies advanced into the Ardennes, but had to withdraw. It now dawned on the French high command that a heavy, if not the main, attack was coming in south of Namur. Reserves were ordered up but could only arrive between 17th and 21st May, and in driblets. In the event they were too few and too late.

Pouring through the Ardennes without being seriously opposed, Army Group A established its leading elements on the east bank of the Meuse between Dinant and Sedan late on 12th May. By the 14th, the break-through was complete. The combination of dive bombers, guns, infantry, and tanks proved too much for the defenders. The main blow fell on the four Series B divisions, who put up practically no resistance. Next day, the advance to the west continued, and the French railway system was bombed. By the 17th, the gap was 60 miles wide; the Ninth Army disintegrated.

Almost unopposed, the German mobile formations drove westwards reaching Abbeville on 20th May, then swung north. The Allies were cut in two. Behind the *panzers* came the 'dull grey masses' of the horsed infantry divisions who, making very long marches, gradually took over the defence of the southern flank of the bulge.

As the German columns moved westward the French also began to occupy a position facing north—thinly held—with the right on Montmédy, thence along the Aisne and Somme and eventually to the mouth of the latter river. On the situation maps it appeared that a wonderful opportunity offered. The British local counter-attack south of Arras on 21st May, with some help from the First Army, shook and worried the Germans; Rommel's division had far heavier losses in this action than in the break-through. But there was to be no 'saving miracle of the Marne.' The French had neither the will, means, nor time to mount a counter-offensive northwards from the Somme against the bulge. The B.E.F. was prepared to co-operate in this offensive until 25th May, when it became apparent that the Belgians were about to crack. The Germans won the 'race to the sea' this time, except in the neighbourhood

of Dunkirk. The B.E.F. and part of the fine First Army were saved by forethought, leadership, skill, and valour, though aided by Von Rundstedt's decision to halt his armour on 23rd May.

On to Paris Once More

The time had now come to achieve the complete destruction of the French Army. The Germans turned south on 5th June, first against Amiens, then gradually extended their offensive eastward, breaking through near Rethel on 9th June. The French troops put up a stout resistance but the armoured columns were soon on their way south-east behind the Maginot Line. In the west, Rouen was occupied on 10th June, and, on the following day, the Seine was crossed below Paris. The French Government then departed to Tours. On 14th June (D+35) the Germans entered Paris; three days later France asked for an armistice.

Reflections

In the official account of the war of 1870, Moltke wrote: "Errors in the original assembly of the army can scarcely be rectified during the course of the campaign." The French had illustrated this by their unsound deployment, which they never succeeded in correcting. In fact, the two wings of the Army were defeated in detail by an opponent who kept his formation so compact that a superior force could be employed as required. Moltke's dictum is still true. For in 1940, the French were not able to overcome their initial mistakes. Distance, aggravated by the lack of mechanical transport and damage to the railways by enemy bombing, prevented timely re-grouping when the blow fell.

Although Napoleon III intended to advance into Germany, he was unable to do so on account of bad organization. Nevertheless, the French believed that with the new *chassepôt* rifle and the *mitrailleuse* their troops in defence would be too strong for any attack to succeed. They were wrong. In 1939–40, in contrast to 1914, the French doctrine was again defensive. They intended to hold a 500-mile front, using reserves to plug gaps. They failed to act when Germany's main forces and armour were engaged in Poland, leaving the incomplete 'West Wall' thinly manned by semi-trained formations. War cannot be won by such methods.

In 1870, they made the mistake of regarding fortresses as a refuge for field armies; in 1940, despite the teachings of Marshal Foch, they did not use the Maginot Line to secure economy of force. In fact, the *débâcle* was not due to 'Maginot mentality', but to obsolete methods, a defensive doctrine leading to faulty deployment of the armies and, when the blow fell, to failures in leadership.

The French were surprised by the rapid mobilization, concentrated advance, marching power, and efficiency of the Germans in 1870. Their formations were often caught napping during the short campaign; they were not trained for war. Foch, in his teaching afterwards, made much of the principle of *sûreté* but, in 1940, the French again suffered tactical and strategic surprise. Not only was the offensive through the Ardennes unexpected, but its speed and the quick resumption of the advance after the Meuse crossings confused and unbalanced the high command—a condition from which it never recovered. Events justified the risks taken by the Germans, though they were, perhaps, more apparent than real. This is, of course, by no means the first example of surprise gained by using ground so difficult as to be lightly held or only watched.

Conclusion

The Germans, in two short campaigns, destroyed the army reputed at the time to be the best in the world. One campaign was a classic in the old style, a triumph of the German General Staff in its heyday, though not free from mistakes. The other, a *blitzkrieg*, was in its origin and skilful preparation one of that Staff's last outstanding efforts before Hitler destroyed its power and usefulness. Prior to 1940, the French had spent millions in concrete, but fortifications are valueless without the will to fight and determination to endure, or, as Foch remarked in 1918: "It is immortally true that there is more in defenders than in defence."

In both 1870 and 1540, the French high command failed to apply the main principles of war. In each case superior generalship, staff work, training, and organization led to victory. In 1940, except in the air, the French were not much inferior in the matter of weapons; but they were completely outclassed in the technique of command, doctrine, and, above all, in morale. Fortunately the spirit of France was revived by the Army in Africa during 1942–43 under the influence of a few remarkable officers. The splendid odyssey Lake Chad-Tunis-Rome-Paris-Strasbourg-Stuttgart would have delighted old Marshal Bugeaud, father of the Army in Africa, whose spirit may well have inspired the renaissance in his successors.

Appendix

Timings of three Invasions of France

	1870	1914	1940
D Day	6th August ...	4th August	10th May
Start Line ...	Frontier with Lorraine.	Frontier with Belgium and Luxembourg.	Frontier with Holland, Belgium, and Luxembourg.
Decisive Battle	Sedan, 1st September.	The Marne, 6th-9th September.	Dinant–Sedan, 13th–14th May.
Paris Reached	19th September (D+44).	German forward troops 18 kilometres from Paris, 3rd September (D+30).	14th June (D+35).
Surrender of Paris	28th January, 1871.	—	Declared an open city, 11th June.
Armistice ...	31st January, 1871.	—	French asked for on 17th June; in effect, 25th June.

A MATTER OF TACTICS

By Admiral Sir Reginald A. R. P. Ernle-Erle-Drax, K.C.B., D.S.O.

USING the word ' tactics ' in its widest sense the three items referred to below, though widely different, may each be described as a problem of tactics, that is, the problem of bringing an enemy force to action as early as possible under conditions that will ensure success, and if possible complete success, or as Nelson would have said " annihilation."

The Two Battles of Narvik: April 10th and 13th, 1940

In teaching tactics at the Naval Staff College we used to point out that one need not in peace use a sledge hammer to crack a nut, but in war one does. Often circumstances and resources will not permit, but when they do we can happily exemplify Nelson's dictum that only numbers can annihilate. A golden opportunity of this nature was presented to us when it was learned, on or shortly before 9th April, 1940, that a German naval force of unknown strength had entered Narvik Fiord.

On 9th April the situation developed rapidly, the sequence of events being as follows :—

At 0820 on 9th April, the Admiralty asked the C.-in-C., Home Fleet, to make plans for attacking the enemy in Bergen and Trondheim, and for Narvik to be watched to prevent a German landing there.

At 0952/9th, the C.-in-C. ordered Captain (D)2 (Captain B. Warburton-Lee) to send destroyers to Narvik to prevent enemy troops landing.

At 1200/9th, the Admiralty informed Captain (D)2 that Press reports stated one German ship had arrived at Narvik and landed a small force. He was to proceed there and sink or capture her. It was left to his discretion to land forces if he thought he could recapture Narvik from the number of enemy present.

To obtain further news of the enemy, Captain (D)2 stopped his force off the pilot station at Tranoy at 1600 and landed two officers. The intelligence obtained showed that the Germans were in much greater strength than had been supposed. Having studied the information available, Captain (D)2, at 1751 on 9th, signalled to Admiralty, repeated C.-in-C. and Vice-Admiral Commanding Battle Cruiser Squadron :—

> " Norwegians report Germans holding Narvik in force, also six destroyers and one submarine are there and channel is possibly mined. Intend attacking at dawn high water."

At this point it may be useful to analyse, if one can, the thoughts in the mind of Captain (D)2. He had received orders from his C.-in-C. (0952 signal) to send destroyers to Narvik. Not even to take his whole flotilla, so evidently the C.-in-C. had no reason then to think the Germans were there in strength. A further order, this time from Admiralty (signal 1200 of 9th), told Captain (D)2 he was to enter Narvik and seize or capture a German ship there. Again no indication of enemy strength. But at 1600 the situation was unpleasantly transformed by the information collected at Tranoy. Captain (D)2 immediately passed this on, and added the words " Intend attacking at dawn high water."

It was clear to him that there might be heavy odds against him, but he probably decided to go on partly because he had been twice told to do so, and partly because he was an exceptionally gallant officer. He might well think that if the order to go

in were to be cancelled it should be done by the issuing authority after hearing how greatly the situation had changed. His signal refers to the Germans "holding Narvik in force" and adds "*also* six destroyers and one submarine are there and channel is possibly mined." He probably knew that strong British reinforcements were not far distant and may well have expected that he would be ordered to defer his attack. C.-in-C. Home Fleet may have meditated doing this. We do not know what time the 1751 signal reached him. But the final word was given by the Admiralty in their signal to Captain (D)2 at 0136/10th :—

> "Norwegian coast defence ships *Eidsvold* and *Norge* may be in German hands: you alone can judge whether in these circumstances attack should be made. We shall support whatever decision you take."

Thus they added to the weight of the possible odds against him, and indicated by inference that if he cared to attack they saw no special reason why he should not do so!

Since Captain (D)2's proposal to attack had not been queried by his C.-in-C., and no one had suggested sending additional ships to go in and support him, he must have felt that he could not well decide to draw back at the last moment. But surely a consideration at the Admiralty of sound tactical principles would have dictated a very different course of action. Would it not have been far better if the Admiralty, immediately they received the fateful 1751/9 signal, had sent the following replies :—

> *To Captain (D)2 :* "Your 1751, await further orders from your C.-in-C."
>
> *To C.-in-C. Home Fleet :* "Reference Captain (D)2's signal 1751/9, we consider his force clearly inadequate. Please arrange for him to attack as early as practicable in company with such other forces that the enemy's annihilation may be ensured."?

What actually happened was as follows :—

Captain (D)2 entered Narvik at dawn on 10th April with five British destroyers which totalled 6,865 tons. They were engaged successively by 10 much larger German destroyers which totalled 17,180 tons. After a most gallant fight the British flotilla withdrew, losing H.M.S. *Hunter* sunk and H.M.S. *Hardy* beached. They sank two large German destroyers and damaged three more. It is well known how Captain Warburton-Lee earned the V.C. and unfortunately lost his life.

But on 9th April, when the attack was first planned, we had a powerful force less than 200 miles from Narvik (approximately 67° N., 10° E.) consisting of H.M. Ships *Renown, Repulse, Penelope,* and a number of destroyers. A part of this force could, if ordered early on the 9th to do so, have reached Narvik on the morning of the 10th and joined Captain (D)2. They might well have failed to catch the morning tide, but they could have held the entrance to prevent escape and then gone in on the afternoon tide only 12 hours later. Actually, our second attack was made on the 13th, with fully adequate forces, and achieved decisive victory. Seven of the big German destroyers were sunk.

Had the Admiralty sent out on 9th April the orders here suggested, it seems probable that our sad losses on the 10th would have been obviated and the dramatic success of the 13th would have been achieved on the 10th or 11th. Certainly there were difficulties on the 10th, but when are there not? The weather was bad, and Vice-Admiral Commanding Battle Cruiser Squadron was preoccupied with his desire to catch the *Scharnhorst* and *Gneisenau*, which he had engaged in a snowstorm

the day before. Probably the situation was further bedevilled by the constant desire for wireless silence. But one signal from the Admiralty would have put everything straight

No one wishes to criticize, but if by 'being wise after the event' one can learn useful lessons for the future, it is an important duty do to so. The lessons in this case are as follows :—

(*a*) When you can, take a sledge hammer so that the nut may be smashed.

(*b*) Conversely, do not engage a much stronger enemy with inferior strength unless there are very strong reasons for doing so. When making contact with an enemy in the open sea it is often necessary to decide quickly either to fight like hell or else run like hell.

(*c*) On many occasions, there is no harm in asking. If some officer within 200 miles of Narvik had asked permission to go in and give close support to Captain (D)2 it is probable that the request would have been approved, with excellent results. It may be noted that the urgent request of Sir David Beatty to enter the German Bight in support of Sir Reginald Tyrwhitt on 28th August, 1914, turned to victory what would otherwise have been a serious British defeat.

(*d*) Once battle is joined, events move very fast. It has been learned on many occasions that supporting forces, to be effective, must be very close. That is, they must be able to open fire within a few minutes of the advanced forces that they are supporting.

(*e*) There is danger of confusion if part of a C.-in-C.'s forces are given direct orders from the Admiralty.

Fo'csle Tactics

It seems unfortunate that so many nations were before us in adopting for battleships and battle-cruisers the high fo'csle with a wide flare beneath it. We adopted it years ago for cruisers and we now seem, in the design of the *Vanguard*, to have admitted our previous error in regard to battleships. The old relatively low fo'csle had many drawbacks and one gathers that the refusal to abandon it was based on a tactical veto, because over a raised fo'csle forward guns could not fire horizontally at point blank range.

Let us examine this argument, which seems scarcely justified.

First, all history shows us that when ships are firing their guns right ahead they are usually in chase, where extreme range is far more likely than short range. Even in short visibility one can now open fire at long range by radar, and if in unusual circumstances the range should really be very short with the enemy right ahead, there is nothing to prevent one altering course a few points and bringing the whole armament to bear.

In the event of a long chase it is a remarkable fact that to steer 12° off the direct course will reduce the speed of advance by only two per cent. That is, a ship steaming 25 knots would then advance at 24½ ; and this loss of half a knot would in heavy weather be more than made up by the reduced pitching and better seaworthiness of the ship with a high fo'csle. This would have been clearly proved if H.M.S. *Duke of York* had been so fitted when she chased and sank the *Scharnhorst* on Boxing Day, 1943. But as it was, she was continually shipping green seas forward, and the *Scharnhorst* was only caught through being lamed by a torpedo hit. On a very similar occasion when the *Renown* (on 9th April, 1940) was chasing the *Scharnhorst*

and *Gneisenau* in poor visibility, the enemy drew out of range and escaped. As a matter of tactics, it is of interest to reflect what might have happened if the two German ships had suddenly turned 16 points and closed the *Renown* at full speed. Their 12 heavy guns against her six would have made things extremely unpleasant for her.

The question now arises, ought we not to convert the *Duke of York*, *King George V*, *Anson*, and *Howe* to the same design as the *Vanguard*? This, of course, is a technical question, to be answered after consultation with naval architects. The Naval Staff would have to consider the cost, and the fact that in the next war there may not be many enemy battleships to fight. But there are sure to be lots of cruisers, and a well-designed battleship with a high fo'csle can often overtake a cruiser in heavy weather. Possibly we should need a modified design, using less weight and height than that of the *Vanguard's* fo'csle. Provided there was a good flare, one could no doubt do with less height.

In any case there would be extra weight, which would increase by a few inches the forward draught, but this would be more than offset by three or four feet of extra freeboard. In addition, we must remember that a heavy ship at full speed always lifts her bows; the flare will greatly reduce pitching and the shipping of green seas forward, and if anything further be needed oil fuel can be pumped from forward into after tanks. On balance therefore it seems that this suggestion for overcoming an unfortunate defect in our four latest battleships should at least be seriously considered.

Oran: The Attack by Force H on 3rd July, 1940

The last tactical problem for consideration was a peculiarly difficult one for it involved the probability of attack against the naval forces of France, recently our ally and comrade in arms. The matter obviously required very careful thought and it may be doubted if there were any precedents that could usefully have been studied. But it seems evident that it was a problem of tactics and timing.

When an ultimatum has to be given involving the use of force, it is usually desirable that the time limit allowed should be very brief, particularly if the prospect of armed resistance is thereby reduced. For example, when the French warships in British ports had to be taken over, orders were given at one port that at dawn the next day overwhelming strength was to be placed alongside each French ship so as to make it clear that resistance was impossible. An officer was then to visit the C.O. (probably at that time in his bed) and explain the situation with the utmost politeness. In each case there was no trouble at all, for most Frenchmen are essentially logical and they recognize a hopeless position when they see it.

But at Oran, where it was vital to work out every step with extreme care, it does not seem that sufficient weight was given to the importance of timing.

The text of the message prepared in London, to be sent to the French Admiral at Oran (Admiral Gensoul) by Admiral Somerville, commanding Force H, was as follows:—

"*To: Monsieur l'Amiral Gensoul from Admiral Somerville.*

"His Majesty's Government have commanded me to inform you as follows:—

"They agreed to the French Government approaching the German Government only on condition that, if an armistice was concluded, the French

Fleet should be sent to British ports. The Council of Ministers declared on 18th June that, before capitulating on land, the French Fleet would join up with the British force or sink itself.

" Whilst the present French Government may consider that terms of their armistice with Germany and Italy are reconcilable with these undertakings, H.M. Government find it impossible from their previous experience to believe that Germany and Italy will not at any moment which suits them seize French warships and use them against Britain and her Allies. Italian armistice prescribes that French ships should return to metropolitan ports, and under armistice France is required to yield up units for coast defence and mine-sweeping.

" It is impossible for us, your comrades up till now, to allow your fine ships to fall into the power of the German or Italian enemy. We are determined to fight on until the end, and if we win, as we think we shall, we shall never forget that France was our ally, that our interests are the same as hers, and that our common enemy is Germany. Should we conquer, we solemnly declare we shall restore the greatness and territory of France. For this purpose we must be sure that the best ships of the French Navy will also not be used against us by the common foe.

" In these circumstances, H.M. Government have instructed me to demand that the French Fleet now at Mers-el-Kebir and Oran shall act in accordance with one of the following alternatives :—

A. Sail with us and continue to fight for victory against the Germans and Italians.

B. Sail with reduced crews under our control to a British port. The reduced crew will be repatriated at the earliest moment. If either of these courses is adopted by you we will restore your ships to France at the conclusion of the war, or pay full compensation if they are damaged meanwhile.

C. Alternatively, if you feel bound to stipulate that your ships should not be used against Germans or Italians, since this would break the armistice, then sail them with us with reduced crews to some French port in the West Indies—Martinique, for instance—where they can be demilitarized to our satisfaction, or perhaps be entrusted to the United States of America, and remain safely until the end of the war, the crews being repatriated.

" If you refuse these fair offers, I must with profound regret require you to sink your ships within six hours. Finally, failing the above, I have the orders of His Majesty's Government to use whatever force may be necessary to prevent your ships from falling into German or Italian hands."

* * * * *

The great danger about this ultimatum was that it gave the French Admiral at least six hours in which to prepare to resist if he wished to do so. The French are a proud race and may be expected to fight whenever they think that honour demands it and it is feasible to do so. But had the time limit been so short that it was not possible for Admiral Gensoul to raise steam and get back on board those officers and men who had been given shore leave, it is very probable that he would have thought it essential to surrender.

The terms of the ultimatum as sent would have been quite suitable if there were strong reasons to suppose that the French would accept, but this does not seem to have been the case.

Otherwise, it is thought that the last four lines (after Clause C) should have been altered to read as follows :—

" If you refuse these fair offers, I must with profound regret require you to sink your ships immediately. You will understand that in these dire circumstances quick decision and quick action are imperative. Admiral Somerville therefore has our orders that his whole force is to open fire on your ships within one hour from the time that this message is handed to you, or to an officer of your staff, unless within that time you hoist the international signal ' we agree ' (flags QFU AQU) and repeat the same by wireless to Admiral Somerville's flagship, H.M.S. *Hood*. The hoisting of that signal must be understood to mean ' We accept without reservation the proposal that you have made. We are prepared to meet your representatives immediately to discuss details, and we will give to them without delay our decision as to which of the three alternative courses of action we wish to adopt.'

" Since resistance would be useless, we feel sure we can rely on you to avoid unnecessary bloodshed and to adopt that course of action which promises best for the defeat of our common enemy and the restoration of France to her former greatness."

* * * * *

With the foregoing message for Admiral Gensoul, instructions, somewhat as follows, should have been sent as to the manner of its delivery :—

Admiralty to Admiral Somerville

The accompanying message for Admiral Gensoul is to be sent to Oran under charge of an officer who is to make every effort to see the admiral personally. If he does, he is to explain, after the message has been read, that you have orders that you are to open fire one hour after he has boarded the French flagship. If your officer cannot see the French admiral in person, he is to make sure that he is on board and is then to hand the message to a responsible officer, explaining that it must reach the admiral as quickly as possible and is of the utmost urgency. Your officer is to say that he has been ordered to ask for a reply, which he is to convey to you as quickly as possible, and he is in any case not to remain on board the French flagship for more than one hour. We leave all other arrangements in your hands, stressing only that complete, unequivocal agreement must be reached, and timing is of great importance.

* * * * *

Admiral Somerville might then have issued instructions to his staff officer as follows :—

You are to use the utmost politeness and, if you meet the admiral, you will explain that I am most anxious to collaborate with him in executing the choice that he may select. If he should compel me to use force, I would do so with the utmost reluctance, but my orders from London leave me absolutely no option.

You can then explain that I shall open fire at the appointed time, aiming first at the ships more distant from the French flagship. If within five minutes she hoists the signal " We agree " I shall at once cease fire. If not, I have to continue until the French ships are totally destroyed.

If the admiral says " We agree " you will make it clear that we understand this to mean that he fully agrees and will loyally carry out the conditions proposed. You will return to H.M.S. *Hood* to report, and will say that an additional officer will be sent at once to discuss details, though he will not, of course, be authorized to discuss any changes in the terms laid down by the British Government. We shall be most happy to offer all possible assistance in connection with carrying out the selected plan, A, B, or C.

* * * * *

The above suggestions describe in outline how the situation might have been handled with more careful regard to timing, the main difference being that in six hours the French ships could make themselves in all respects ready to fight whereas in one hour they could not. Actually they were given at least eight hours before fire was opened. Thus the new battle-cruiser *Strasbourg*, with five destroyers, was enabled to raise steam and escape from the port at 1820 that evening. They all arrived undamaged at Toulon.

A further regrettable result of the long time limit was that Admiral Gensoul was able to telegraph a garbled account of the situation to the French Admiralty in Paris. Without making any mention of the first three alternatives offered, he told them he had been presented with an ultimatum in the form: " Sink your ships within six hours or we will use force." Admiral Darlan and the French Council of Ministers considered this message and not unnaturally supported Admiral Gensoul's proposal to resist. One cannot be sure that, if dealt with as proposed, the French Admiral would have accepted the inevitable in order to avoid unnecessary disaster, but at least it seems highly probable.

As regards the future, it should be remembered that in both our wars with Germany the declaration of war came from Britain and our ultimatum had a carefully calculated time limit. If any such case occurs in the future the following assumptions would seem reasonable :—

(*a*) As soon as our Government has clearly stated a policy which our potential enemy is not prepared to accept (e.g. our guarantee to preserve the integrity of Poland), there is always a possibility that we may be attacked without warning.

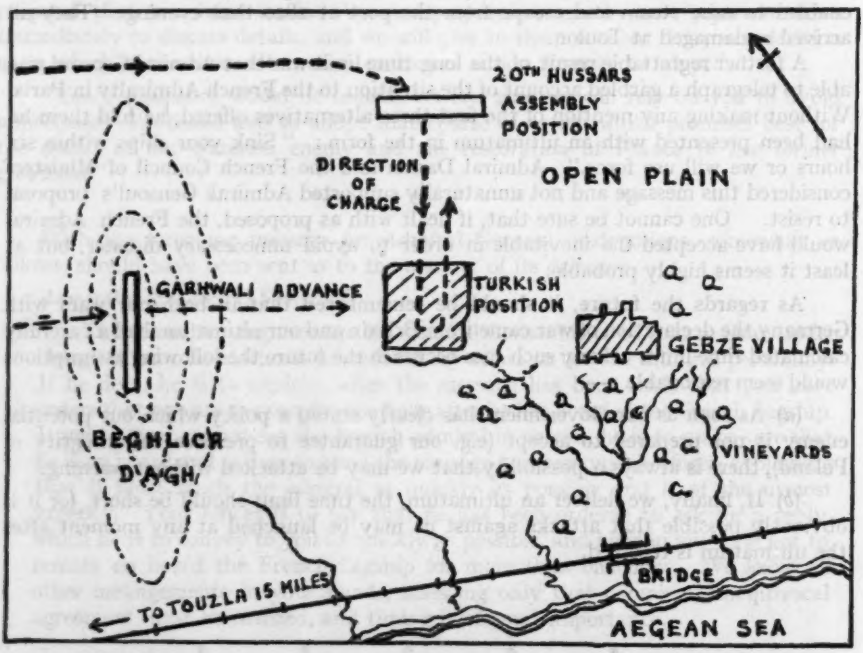
(*b*) If, finally, we deliver an ultimatum, the time limit should be short, for it is obviously possible that attacks against us may be launched at any moment after the ultimatum is received.

THE LAST BRITISH CAVALRY CHARGE?

By Major-General H. L. Davies, C.B., C.B.E., D.S.O., M.C.

THE interest that has been aroused by the publication of Cecil Woodham-Smith's book *The Reason Why* leads me to describe briefly a little-known affair which, unless I am very much mistaken, marked the last charge with the *arme blanche* ever made by a complete regiment of British Cavalry. This occurred in July, 1919, in Anatolia, during the events immediately preceding what is generally known as the " Chanak incident."

In the Summer of 1919, a British-Indian force was in occupation of Ismid, preventing the infiltration of Turkish Nationalist bands into the Ismid Peninsula on the north coast of the Aegean Sea. The land communications of this force ran along the coast and at one place passed over an important bridge called the Gebze bridge.



Gebze village, a mile or so from the bridge, was on a plain dotted with vineyards, and dominated by a great hill bastion called the Beghlich Dagh. Early in July, a band of Turkish Nationalists, some 400 strong, infiltrated from the north, seized Gebze village, blew the bridge, and remained in occupation.

It became a matter of some urgency to restore the communications. Consequently a force of all arms was concentrated at Touzla, 15 miles west of Gebze, with orders to evict the Nationalists, secure the village and bridge, and repair the latter. The striking force comprised the 20th Hussars, the 30th (H) Battery, R.A., the 2/39th Royal Garhwal Rifles, and a detachment of Engineers. This striking force set off on the evening of 12th July, 1919, from Touzla with the object of reaching positions of assembly by first light, from which the attack on Gebze could be developed.

The 2/39th Royal Garhwal Rifles, supported by the artillery, were to secure the Beghlich Dagh by a night attack. The 20th Hussars were to assemble north of the Beghlich Dagh and to operate, as the situation developed, against the flank and rear of the Turks opposing the further advance of the infantry from Beghlich Dagh on to the village.

Beghlich Dagh was found to be occupied by a Turkish outpost. This was rapidly eliminated by the Garhwali night advance and by first light on the 13th July the hill features were in our possession, while the cavalry were ready in their assembly position on the north flank.

As the Garhwali attack on the village developed from Beghlich Dagh, the Turks moved forward from Gebze and occupied prepared positions covering the village. The 20th Hussars, being very suitably placed on the Turkish flank, promptly proceeded to charge.

It was a magnificent spectacle as seen from the top of the Beghlich Dagh. The Hussars charged with two squadrons up, each in column of troops. The ground was flat and not unduly broken, so the charge was carried out at a fast pace over the 1,000 yards or so which separated the cavalry's assembly position from the Turkish flank.

The Hussars went right through the Turkish position, wheeled, and passed through the enemy a second time, their sabres flashing in the early morning sunshine as they slashed their way through the somewhat disorganized riflemen. The Turks for their part, though taken completely by surprise and tactically quite unbalanced to deal with this threat from their flank, behaved most admirably. There was no panic. Little groups of Turkish riflemen disposed themselves to fire into the onrushing squadrons and, even after the reverse charge, they were still a coherent unit standing their ground.

The threat of the now rapidly advancing Garhwalis against their disorganized front, however, was too much even for the dour Turkish infantry, and they withdrew deliberately, and quite coolly, through the village, dispersing into the tangled mass of vineyards and ravines south-west of the plain.

As might be expected in a surprise attack of this nature, the Hussars' casualties were very light. They had one officer badly wounded in the shoulder and several horses were hit. The Turks lost 20 to 25 men sabred.

There was no more opposition after the Turkish withdrawal. The village was occupied, detachments were established at tactical points, and the bridge secured. Repairs were put in hand immediately and the communications were re-established within three days. The Turks never ventured into the peninsula again after this action, and shortly afterwards the Greek army took over the occupation of the area from the British.

After reading *The Reason Why* it is satisfactory to be able to record that the last British cavalry charge was well planned, well handled, and entirely successful.

SOME SIDELIGHTS ON THE GARB OF OLD GAUL

By " Lictor "

IT is some time since war was shorn of its panoply.

The King's Red Coat, the war-horse who sayeth " Ha Ha ! " among the trumpets, flashing sabre, and nodding plume live now only in regal ceremonial and in museums. Yet their day is not long past. Only about 70 years ago, when it had been proposed that the British Infantry should wear some colour less conspicuous than scarlet, the then Commander-in-Chief, the Duke of Cambridge, rose at the Lord Mayor's banquet at the Mansion House to express the hope that the British soldier would never be ashamed to bare his breast to enemy bullets.

His auditors, filled with patriotic pride and the Lord Mayoral banquet, received these sentiments with great applause. These ideas, admirable enough at the Mansion House, were, however, felt to be more suited to that sphere than to the actual battlefield itself. (The first Boer War occurred at about this time.) The man on the spot obstinately persisted in developing contrary views. He was ashamed to bare not only his breast but, with all the more modesty, every portion of his anatomy to enemy bullets.

With this change came another. It was for long the custom to fight battles in one's best clothes. They would think it odd in the Navy if an engineer officer appeared at his wedding in a suit of dungarees ; but for many years the Army went to war in service dress and walked out in it too. At least one battalion of the 1st Division wore its best clothes for manœuvres in 1930. However, a change was made at last.

Nowadays, we have the alternatives of battle dress, service dress, and No. 1 dress. The last is colourful, but so expensive as to be very rarely seen. There remain the two khaki-coloured types of uniform. Both of these are used as walking-out dress. (It should be noted that walking-out has no official connection with what is sometimes known as courting.) The drabness of these is almost unrelieved, except in Scottish regiments and perhaps more particularly in Highland regiments. It is of the garb of the latter that this article treats.

Highland dress came into the Army over 200 years ago. At first it attracted considerable attention and was considered by one writer to be " of a nature not to be observed by the fair sex without a shock." Their feelings were to some degree spared by the fact that the first Highland regiment to be raised spent much of its life in Canada.

It was at first supposed that the climate of that country was not suited to the wearing of the kilt. This view was hotly contested by the Highlanders themselves, who might indeed be supposed to have more experience of inclement weather than any other inhabitants of these islands. Their views were soon to be dramatically justified.

A brigade, consisting of the Highlanders and some other regiments, had occasion to ford a river which was thigh-deep. When they emerged the water drained off the kilts as it does off a woollen bathing dress, and the remaining dampness was dried by their swinging on the march. The white leather breeches of the other regiments were, however, soaked and so remained. When the brigade arrived in camp the war was apparently not very active. The breeches were removed and hung up to dry. Dusk fell and frost gripped. The night was broken by an alarm.

The Highlanders quickly stood to. Their comrades, to their consternation, found their breeches frozen as hard as boards. They were obliged to fight the action without them.

At about the middle of the XVIIIth Century, a number of Highland troops were travelling in a ship which was wrecked on the French coast near L'Orient. The troops were nearly all saved and seem to have come ashore in their uniforms. A report made by the local governor refers to these in some detail. After describing the kilt as then worn he adds: "It is perfectly true that they wear nothing underneath it." One cannot help admiring the efficiency of the French intelligence service in clearing up in three days a mystery which the English have not solved to their satisfaction in as many centuries. One is led to speculate on the nature and methods of the agents employed beyond the Channel.

The Russians contrived to settle the matter too, and to settle it, as we should say to-day, at the highest level. After the Battle of Waterloo, when the Allies had occupied Paris, a party of men drawn from three Highland regiments was sent to undergo inspection by the Tsar of Russia. The party was commanded by a sergeant. The inspection was no half-hearted affair, with the inspecting officer passing down the line merely being glimpsed by, and glimpsing at the troops. The Tsar examined every detail of their uniform and equipment and asked the sergeant, presumably through an interpreter, if he felt cold in Winter. He then lifted up the sergeant's kilt to his navel, pinched his skin, and examined him thoroughly. The temperature of the sergeant during these operations, when it was Summer, not Winter, was not, as far as is known, recorded; but 'hot and cold all over' would probably be a reasonable description of it.

The Mayor and Corporation of Hull lacked the first hand information of the French and Russians—a position which probably obtains again at this moment—but they seem to have had their suspicions, and on a Highland regiment being stationed among them 150 years ago, offered to present to each of the troops a pair of long woollen drawers. The offer, though no doubt kindly meant, was declined.

At the end of the XVIIIth Century, when the majority of the Highland regiments was raised, the kilt was customarily worn by most men living in the Highlands. This suggests that the Diskilting Act of 1746 had never been very rigidly enforced. Many recruits entering Highland regiments in the 1790's had never worn a pair of trousers. When trews were issued to them, as they occasionally were in the hotter climates, it was a common joke for their comrades to persuade them to put them on back to front. In the first ten years of the XIXth Century, several battalions abandoned the wearing of the kilt. Some of them took it up again after the Cardwell Reforms of 1878, when a number of single battalions were linked in pairs to form regiments.

At this time the kilt as an article of everyday wear had almost disappeared. One of the re-kilted battalions had to import a small party of instructors from its new sister battalion, which had continued to wear Highland dress, to run a course of instruction on the meaning of the restored garb.

A rather surprising change was made during the Peninsular War in the dress of a certain proportion of the kilted regiments. In those days, infantry battalions contained what were called light companies. These were composed of active, lightly equipped men whose task it was to go forward in extended order to skirmish in front of the solid wall of their comrades. They had the duties of keeping the French

voltigeurs, who were similarly employed, at a distance and of harassing the main French assaulting columns as they moved forward to the attack. For men so employed the kilt would seem to be an ideal garment; but those concerned were ordered to abandon it and to wear instead trews strapped below the boot. These, and their counterparts, the mess overalls of a later day, restrict free movement more, probably, than any garment ever worn by soldiers since suits of armour went out of use.

The military kilt was originally made from three and a half yards of cloth. Nowadays, about eight are used. In 1814, there were 14 pleats in a private soldier's kilt. By 1896, the number had risen to 24; and by 1914, it was 28.

The kilt was still worn by Highland regiments during the 1914–18 War. The pleated portion was said to be capable of stopping a fragment of shell. On the other hand, the garment could not have been a very convenient one at, say, Paschendaele, where the mud was deep enough to drown men.

It was worn in action even later. In some frontier operations in 1935, a battalion of a Highland regiment took part. Other units and supporting arms observed with interest the progress of one of its platoons up a hillside on an August day when the temperature was 120° in the shade. Every man was observed to stop, remove his kilt and sling it over his shoulder, resuming the advance *en sans culottes*, so to say.

It made a few appearances in action in the 1939–45 War. A Regular battalion seems to have worn it in the early days in France. A Scottish Commando wore it for a seaborne assault in 1944. A Chindit officer who wore the kilt in the Burma jungle probably enjoys the distinction of having been the most uncomfortably clothed man on either side in the course of those operations, or indeed of the whole war.

As far as one knows, the kilt has not been worn in action in Korea or Malaya, and it may be that its day as a dress for battle is over; but it will, let us hope, be with us for a long time on more ceremonial occasions, and in the country and climate for which it was originally designed.

SIGNAL "I K"

By Desmond Wettern

IN the year 1939, the new cargo/passenger liner *Steiermark* was completing for the Hamburg-Amerika Line. She was of 9,400 tons displacement, had a maximum speed of 16 knots, and was powered by Diesel electric.

She was intended for the far eastern service of the company, and when war was declared she was nearly ready for her maiden voyage. At once work was started on her to convert her into a commerce raider. She carried a powerful armament of six 5.9-inch guns (admittedly of an old pattern), two 3.7-cm. and four 2-cm. guns. The latter were close range A.A. weapons. She also carried two spotter aircraft, one fast boat for minelaying, 360 mines, four tubes above water and two submerged.

So, on 3rd December, 1940, the *Kormoran*, as the *Steiermark* was now renamed, sailed from Gotenhafen for the North Atlantic. Presumably she escaped the British cruiser screen in the North Sea. Unnoticed, she sank the s.s. *British Union* and a Greek ship early in 1941, and then she sank the Blue Funnel liner *Eurylochus* 900 miles south-west of Freetown on 29th January, 1941. Twenty-seven Chinese ratings and four European officers were rescued from this ship. Some of these prisoners were transferred to a supply ship somewhere in the South Atlantic. Just before this a British officer from the *Eurylochus* was flogged for accidentally watching the German torpedo tube crews at action stations. So far as is known this was the only stain on the *Kormoran's* record.

On the same day that the *Eurylochus* was lost the *Afric Star*, 11,900 tons, was also sunk. During 7th–9th February, 1941, the *Kormoran* was in company with Ship 33, the *Pinguin*, a German supply vessel. On 16th March, she met a U-boat off Natal, and between 17th–19th March was in company with the armoured ship *Admiral Scheer*. Off St. Paul Rock on 22nd March, she sank the *Agnita*, 3,552 tons, and three days later the *Canadolite* was taken as a prize off Natal. In the latter part of March and early April she was in company with, or at any rate met, the supply vessel *Nordmark*. It is interesting to note that this vessel was a sister ship of the notorious *Altmark* and that she is now serving in the Royal Navy under the name of *Bulawayo*. At this same time she also met two other German vessels, but it is uncertain what types of ship these were. On 4th April, she met the supply vessel *Rudolf Albrecht*. On 9th April, the *Craftsman*, 8,022 tons, was sunk and three days later the *Nicolaos*, 5,486 tons, was also sunk. All these encounters took place off Natal, and urgent repairs to machinery appear to have been made at about this time.

Following this period of cruising off the African coast, Ship 41, as the *Kormoran* was known, met the *Atlantis*, known as Ship 16, presumably in the middle of the Indian Ocean. From 13th May the *Kormoran* was disguised as the Japanese ship *Sakita Maru* and from 5th June was disguised as the *Kina Maru*. On 14th and 17th May, she met the supply vessel *Alstertor* off India. About this time she was sighted by an unknown American freighter and a little later she was seen by H.M.S. *Shenking*, and again by H.M.S. *Canton*, a former P. and O. liner converted into an armed merchant cruiser. All these sightings were in the area of Madras. On 26th June, the Yugoslav ship *Velebit*, 4,153 tons, was sunk east of Madras, and on the same day the British ship *Margeba* was sunk south of Ceylon.

On 13th August, the *Kormoran* was seen by a 6,000-ton vessel off Western Australia. This vessel sent out the signal FT QQQQ, or raider distress signal, and

the *Kormoran* made no attack and was evidently scared off, as on 1st September she was again south of Ceylon and on the same day attacked the *Wairangi*, 12,437 tons, which was thought to have been sunk. Actually this ship was not sunk until 13th August, 1942. The Greek ship *Stamations G. Embiericos*, 3,941 tons was also sunk. From the 16th or 18th of October until the 24th the *Kormoran* and another raider or supply vessel, the *Kulmerland*, were off Perth.

The *Kormoran* hoped to lay mines off Carnarvon in Western Australia, and she was also waiting for a certain ship to leave Fremantle. This may well have been the Shaw Savill and Albion liner *Waimarama*, as it is known this ship was on the list Fregatten-Kapitan Detmers, the *Kormoran's* captain, carried aboard.

On 19th November, 1941, the day dawned very hot with but little wind. The visibility was good. The *Kormoran* was steaming north at ten knots, an economical speed. At about 0930, a vessel was sighted about 11 miles astern. Soon this vessel was recognized as a cruiser. The *Kormoran* at once turned into the sun at full speed and signalled, " Disguised raider in sight, 26° S. 111° E., *Straat Malakka*." The *Kormoran* was disguised as the *Straat Malakka* of the Koninklijke Paketvaart Maatschappij, of Amsterdam. She closely resembled this ship. The signal was picked up by the tug *Uco*, but was unintelligible as the tug could not identify the ship or position properly.

The range was closing down, the cruiser could now be seen clearly with binoculars. At seven miles she signalled N.N.J. (" You should make your signal letters "). At once the *Straat Malakka's* letters were hoisted on the triatic stay, thus they would be very hard to see from anywhere abaft either quarter.

Again the cruiser ordered the German vessel to hoist her signal more clearly. At a distance of two miles the cruiser hoisted I.K. (" You should prepare for a hurricane or typhoon "). Captain Detmers did not know the meaning of the signal and reluctantly gave the order, " Down screens—open fire." The *Kormoran* at once opened up with all her guns, the range being about one mile. The German ensign was hoisted as the order " Down screens " was given.

Aboard the cruiser all guns and the port tubes were trained on the *Kormoran* as she came up on the German vessel's starboard quarter. The aircraft on the cruiser's catapult was warming up, but its engine was stopped just before the action commenced.

Three seconds after " Down screens " in the *Kormoran*, her first salvo knocked out the cruiser's four 4-inch dual purpose guns on the port side. After the first salvo two torpedoes were fired, the cruiser was hit forward, the forecastle collapsed, and " A " and " B " 6-inch turrets were knocked out.

Meanwhile, the cruiser's shells had put one of the *Kormoran's* main engines out of action as it had easily penetrated the thin decks. Boats on the davits were burning. Opening the vents to clear the smoke (closed during the action to prevent spread of fire), a German E.R.A. carried out emergency repairs and the engine was re-started.

The cruiser's aircraft was knocked out early in the fight. Four torpedoes were fired at the German ship. Two passed ahead and two astern of her. Both ships were now burning fiercely. At 1640, the cruiser attempted to ram the *Kormoran*, but she failed and passed close astern.

The German crew tried to extinguish the largest fire which was caused by a fuel tank catching alight deep down in the ship. However, most of the fire hydrants were

out of action, and the flames got a hold. All power having failed it was decided to abandon ship. By now it was growing dark. The cruiser, which had steamed away under a dense column of smoke, was now a vast torch on the horizon. This was the last that has ever been seen of H.M.A.S. *Sydney* or her complement—with the exception of one.

Aboard the *Kormoran*, three rubber rafts and two wooden boats were still serviceable. One raft collapsed in the water, however, and 60 men were drowned. After a tremendous effort the two boats were lowered from the davits, all the electric winches being useless. Aft, the two aircraft, the minelaying boat, and two boats each capable of taking 100 men were useless owing to the impossibility of hoisting them out.

Shortly before 2300, the ensign was struck and charges were placed preparatory to scuttling the ship. At about 2330 the *Kormoran* blew up.

As has been mentioned before, no trace of the *Sydney* was found, but some months later a Carley float, made by the firm of Lysaght of Bristol, was washed ashore on Christmas Island, 200 miles south of Java. The name *Sydney* was also just discernible on the float. In the float was the body of a stoker in a boiler suit. He was buried in a box, an ordinary coffin being useless as the legs could not be straightened. The service was conducted with full military honours.

The *Sydney* had escorted the s.s. *Zeelandia* to a position 20° 56′ S. 104° E. on 18th November, 1941. Here she handed over the escort to H.M.S. *Durban*. She was due back in Fremantle on 20th November. On her becoming overdue an air/sea rescue search was conducted without success on 23rd November. No merchant ships entering, leaving, or in the area of Fremantle from 19th November to 22nd November reported anything unusual, nor were any wireless distress messages received. It seems probable that visibility on 23rd November was bad, as rain storms were reported on 21st November, only 200 miles south of the scene of the action, and such conditions would have hampered an effective search. Meanwhile, 257 German survivors from the *Kormoran* either came ashore in Western Australia or were picked up by other vessels. The tanker *Trocas* reported she had picked up 25 Germans from a raft in 26° 6′ S. 111° 40′ E. One hundred and three more survivors came ashore at Carnarvon. The s.s. *Koolinda* picked up 31 more Germans in a boat, the *Aquitania* rescued another 26, and H.M.A.S. *Yandra* picked up 70 Germans and two Chinese stewards who had been captured when the s.s. *Eurylochus* was sunk in the area 85° 15′ N. 25° 14′ W. on 29th January, 1941. The s.s. *Charon* was among other ships which picked up odd survivors.

This, then, is the brief outline of one of the most dramatic naval actions of all time. It is also one where many questions might well be asked. Why was so little trace found of the *Sydney*? Why, in wartime, did she close an unidentified vessel to the range of one mile? These are questions which will never be answered.

It is interesting to note that in 1914 the first prize taken by the German raider *Emden* was called *Kormoran* and the former ship was sunk by the previous H.M.A.S. *Sydney*.

The author is particularly indebted to W.O2 KL. O.Marvinski, Bootsmaat Otto Jürgensen, Bodo Herzog, and other members of the crew of the *Kormoran*. Also to Asst. Dockmaster E. Ashworth, P.L.A., W. H. Rusholme, Esq., Herr H. Elfers, and members of C.N.I. Department, Admiralty, for all the help and information received.

A CASE FOR ARMY DECENTRALIZATION

By Lieut.-General Sir Giffard Martel, K.C.B., K.B.E., D.S.O., M.C.

FOR about 20 years there has been a strong feeling that the basic organization of the War Office was wrong in principle even though the very able staff which this Office has always possessed were able to make it work. There have been examples of outstanding efficiency and success during this period in some of the branches and directorates. If an improved organization could be devised by which the branches and directorates could carry out their work without interference, and if at the same time the officers concerned with the higher control could concentrate on their work and produce sound decisions without having to waste time on routine work, the value to the army would be very great.

Some suggestions on these lines were made before the 1939–45 War and I wrote a paper on this subject in 1937. It raised much discussion, but no action was taken. During the 1939–45 War, however, certain weak points appeared in the War Office and changes were made which introduced what came to be called " Arms Directors". This was the first step towards having the decentralized " subsidiary companies " which I proposed in my original paper. I therefore made some slight alterations to my paper and submitted it to the War Office, hoping that some action would be taken. They were, however, against introducing a major change during war-time. This was a mistake because it is far easier to make a considerable change of this nature in war-time. The War Office retained the arms directors but did not give them sufficient authority to carry out the full scheme that some of us had proposed.

We will now discuss these proposals. The first step must be to clear our minds of the main principles on which the War Office should be based for the efficient control of the whole military machine. It would be of considerable assistance if one could start by an examination of other large organizations to deduce the main principles and the modern trend in organization. Unfortunately, industrial concerns in civil life are incomparably smaller than that with which we are faced in the Army ; it is, however, well to remember that the Army has usually followed civilian practice in the past in many ways. It is therefore proposed to start with a brief examination of the phase through which industrial organization has passed in reaching the present-day position.

The organization of large civilian industries passed through two phases before reaching the present system. First of all, we had small concerns which had been developed from the village workshop. Then came big business, which bought up or took over nearly all the small concerns. This organization brought with it a high degree of centralization. Nothing could be done without reference to headquarters, and yet it was efficient because business concerns were simple at that time. After the 1914–18 War, the business world became far more complicated and it was then found that this high degree of centralization was cramping initiative and resulted in lack of drive and energy. Smaller concerns that were less cramped in this way began to raise their heads. A gradual change was therefore seen to take place. Although policy and big decisions were decided at headquarters, a large degree of decentralization was adopted in other matters. Big concerns organized themselves in such a way that the actual work was controlled by comparatively small bodies (usually separate companies) which were allowed plenty of initiative and could make full use of drive and energy to further their purpose. At the same time the main policy was decided at the centre and the work of these bodies was co-ordinated to

avoid overlap and waste and so raise the standard of efficiency of the whole. One has only to look round to see innumerable instances of this policy. Lord Nuffield's organization is an excellent example of this last phase in the organization of big business. His headquarters is quite a small affair and all thought and policy is controlled there, but all action is decentralized to the specialist companies located at various places.

It is, of course, natural and inevitable that army organization has followed much the same course though lagging a good many years behind the civil side. First of all, we had a high degree of decentralization. Officers commanding units were a law unto themselves. They paid and fed their men as they thought fit. This resulted in a low standard of efficiency, for there was no proper centralized control. Then came the Haldane reforms following the lines of the centralization in civil industries. Everything was centralized at the War Office and a high state of efficiency was reached. This was the position just before the 1914–18 War. The Army being then a simple affair, all went well. Since then we have changed to an Army of great complexity, which is inevitable in modern war, as it is in civil industry. These complications make it extremely difficult to continue efficiently with a completely centralized control. But whereas the civil side has solved this problem by permitting a large degree of decentralization while retaining control of policy at the centre, we in the Army have retained both policy and control of detail at the head of affairs in the War Office. We have not yet followed the civil side in this last change to a large degree of decentralization for executive control.

Organization can be divided into two main groups. We can organize by objects or by subjects. We have seen that civil life has turned mainly to an objective organization. A specialist company puts all its effort into producing a limited range of products. The whole object is to produce the best possible article at the price. We do not find all the drawing offices of these specialist companies being grouped together in a subjective organization; every activity in the company is under the direct control of the manager of that company. This is how their efficiency is ensured. At the same time certain activities are kept in a subject organization. Buying of materials is usually controlled from the centre in one organization which serves all the companies.

Let us now see how the parallel applies to the Army. Quite clearly some main departments such as operations and intelligence must be on a subject organization at the War Office. They affect the whole Army. With military training there must obviously be a small department at the centre to control main subjects and main issues that affect the whole Army, but at present this department also attempts to control all the unit and individual training of the various arms and branches of the service. This is the worst form of centralization and the solution for this will be suggested later. When we consider the Adjutant-General's department, we again find this curious mixture of an essential central control to deal with all the great personnel questions such as man-power, and all the detailed allotment of men and appointment of officers in their various arms, all grouped into this one great subject organization.

The preceding paragraph brings out clearly that the Army has not yet learned to sort out what has to be organized centrally as a subject organization and what should be decentralized and dealt with objectively in 'specialist companies'. Anti-Aircraft is already a separate command, but in addition it is suggested that the

activities in the Army which should be organized objectively in this way are seven in number, as follows :—

Infantry.	Signals.
Armoured Corps.	Land/Air Warfare.
Artillery.	Territorial Army and Cadets.
Engineers.	

There are already directors for each of these activities in the War Office, but they have limited powers. It is proposed that these arms directors should control the individual training, organization, and equipment, and generally the well-being of that branch of the Service. This would convert a large part of the organization of the War Office into a decentralized and objective form. Naturally, the War Office central control would be needed to co-ordinate these activities, just as it is in the civil organization which we examined. For instance, the Adjutant-General would allot the personnel to the various directorates based on War Office policy, but the above directorates would be left free to do the best they could with what they were given, instead of being governed by small War Office departments trying to settle these details for them.

The foregoing paragraph outlines the organization of part of the War Office on these objective lines. This leaves the following on a subjective organization :—

D.M.O. & I. (operations and intelligence).
D.M.T. (military training).
A.G. (manpower and personnel).
Q.M.G. (supplies for the Army).

It should be made clear that none of these should deal with the matters of detail which belong to the directorates mentioned in a previous paragraph. They should be the higher controllers of policy in the same way as the centre controls policy in a great civilian organization.

What it comes to is that each of the directors mentioned earlier would have the following responsibilities :—

(*a*) Advising the Adjutant-General to ensure that the right type of personnel is allotted to him.
(*b*) The individual training of those personnel.
(*c*) To see that his units receive the equipment they require.
(*d*) To deal with organization and establishments within his sphere of activity (subject to over-riding control as regards manpower and pay of personnel).
(*e*) All Military Secretary and Adjutant-General matters within his sphere of activity.

In other words, the directorate would be responsible for producing the right types of unit and handing them over to the Army to be used. This may be described as ' forging the weapon ' as opposed to ' using the weapon'. One person must be responsible for forging the weapon ; many people will use it. This is an exact parallel to the companies in civil life. They manufacture the article and sell it to the public who use it. If the article is bad the public do not buy it and the company goes bankrupt. With this proposed organization the directorates would have a fair run without interference. There is little doubt that great enthusiasm and drive would result. At present these responsibilities are divided between many War Office departments, which tends to put a brake on output and efficiency.

Before embarking on a change of this nature one would naturally wish to see whether there is any past military experience to serve as a guide as to whether this system is likely to be successful. The most efficient parts of the Army at the beginning of the 1939–45 War were probably R. Signals and the R.A.S.C. The Tanks were also making a great progress tactically and developing modern methods of control which were a long way ahead of other nations, but were, of course, held back by lack of tanks. In each of the above cases, the control was in the hands of their own small progressive branches at the War Office which were on the lines of the directorates or 'specialist companies' referred to in these notes. The zeal and activity in these branches was very noticeable and resulted in great improvements.

During the war, I was charged as Commander of the Royal Armoured Corps, with carrying out a huge expansion. During this time, 11 armoured divisions and 10 army tank brigades were formed. It was a wise move to make this headquarters, which, in effect, established a 'special company' to make armoured forces and hand them over, when formed, to the Army to fight collectively like any other part of the Army. It also advised on the use of these armoured forces just as any company advises on the correct use of its products. If this headquarters had not been formed and if all this activity had been handled by the normal War Office staff, failure would have resulted. Drive and zeal naturally follow from the formation of a headquarters of this nature. The equipment side was retained in the War Office and never handed over to this headquarters, and it did not meet with any great success. The first essential was to obtain an agreed technique for armoured warfare throughout the forces wherever they might be fighting. This meant constant visits to the Middle East and also to India and Iraq to discuss all these questions. Within a year agreement was reached on all these matters, which was of the greatest assistance to the Corps, but this could never have been achieved unless there had been a headquarters to carry out this work.

To prove this statement it is only necessary to see the state of affairs that existed before the war and up to December, 1940, when there was no headquarters of the Royal Armoured Corps. During that period there was constant chop and change in the organization of the Armoured Division and several years went by without any decision being reached.

Turning to smaller but very practical points, there was a period in 1941 when the Army intake closed down. It was, of course, essential for the R.A.C. to take in a proportion of men each month if they were to produce their specialists in time. They were told that no men would be forthcoming, so the Headquarters, R.A.C., obtained permission to take in some sixty volunteers each month. These were high-class men who would normally have gone to the R.A.F. or the Navy, but who volunteered to join the R.A.C. In this way the R.A.C. obtained the necessary number of men to train at once as specialists in various lines. If there had been no Headquarters, R.A.C., would the various War Office branches concerned have perceived this vital necessity and taken all the necessary and difficult steps to produce these volunteers? It is not at all likely.

Another difficult and vital problem was the provision of the R.A.C. mechanists and fitters for all these new formations. By foresight and drive the necessary schools and arrangements were made at once, and these specialists were with their units within a year, fully trained and up to strength. Alongside this problem we had the necessity for a considerable number of Ordnance armament artificers for the workshops and Light Aid Detachments. This was dealt with by normal War Office

methods. The Adjutant-General had to produce the bodies; their training came under the Director of Military Training and the responsibility for producing them in the right numbers lay with the Ordnance at the War Office. Such an organization was bound to fail and it did.

These remarks are not made in any boastful spirit, and many further instances could be given. They are merely made to show the necessity of having one directorate or body whose object it is to produce the particular type of unit required and which deals with every part of the work of forming and equipping these units efficiently. Let it be clear that the activity of these directorates would be definitely limited to building up efficient units and advising on their employment. Suggestions are often made that they would interfere with the co-operation of these units with other arms. The exact opposite is true. The better the weapon is forged, the sooner it can be handed over to the user. It is difficult to see any disadvantage or argument against this decentralization to directorates controlling everything which concerns the well-being of their particular activity.

The establishment of this form of organization would mean a great step forward in the Army. The War Office would become much smaller. I should like to see these arm directorates called 'Commands'. This is the term used in other Services, e.g. Fighter Command, etc.

Just think of the great advantages that this type of organization would provide. The Army Council and the senior officers at the War Office would confine their work entirely to higher control and the more vital matters. It seems to me to be quite clear that in the past, and under this present organization at the War Office, these officers were trying, at the same time, to deal with a mass of comparatively unimportant detail which should never have been brought to their notice at all. For example, with the present organization it is quite common to find, say, the Adjutant-General becoming concerned about the employment of a captain or even a subaltern. This work could be done so easily and so much better by the director concerned.

In spite of the obvious advantages of this sytem, a swing back away from the arms directors policy was started even before the end of the war and was pursued after the war. The General Staff second grade officers at the War Office referred to this as a tragedy and indeed it was. Officers of that particular seniority at the War Office are nearly always right. This period just before the end of the war and for a few years after the war was depressing. The headquarters of the Royal Armoured Corps was abolished and we ceased to build heavy tanks, with the result that our tanks were blown off the battlefield in Normandy. This was in addition to some other mistakes that were made at that time.

The Finance Branch at the War Office was totally opposed to this system of decentralization, because they would lose the detailed control which they love. Each activity would be allotted its share of manpower and funds and it would be determined to produce the best possible result within these limitations. No one would seek out unnecessary waste more keenly than Regular officers who would be determined to increase the efficiency of their own 'Command'. The present ridiculous necessity to obtain financial sanction for every little decision would disappear under this system, but to try and support their case the finance branch have produced figures showing a financial saving by keeping to this old-fashioned system of subjective control with all its drawbacks. This, to my mind, is one of the most unfortunate reversals of policy that has occurred in the history of the War Office. Considerable savings as well as a great increase in efficiency would result if this policy of 'Commands' for the arms directors was adopted.

ECONOMY OF INFANTRY

SOME THOUGHTS ON IMPROVING FLEXIBILITY

By Major N. C. Baird, O.B.E., The Queen's Own Cameron Highlanders

ANYONE following even casually the events of today, and taking notice of the observations made by the Chancellor of the Exchequer, will realize that we have ahead of us a steady tightening of the purse strings and continual pressure by the Treasury to reduce the Army Budget. More than ever is it important that we take stock and take measures to ensure that we use our resources to the best advantage. This may well have a fortunate result. Hitherto, events, since the end of the War, have pressed the Army, and in particular the Infantry, so hard that there has been little chance to consider or implement reforms.

The need to quicken the tempo of modern operations, to increase flexibility and manœuvre, is widely recognized. Some years ago, Captain Liddell-Hart wrote a most interesting article for *The Army Quarterly* entitled *How to quicken Manœuvre and gain Flexibility in Land Warfare*, and, recently, in the November, 1953, issue of the Journal, an article appeared by Major W. N. R. Scotter entitled *Streamlining the Infantry Division*. I do not know if Major Scotter was influenced by Captain Liddell-Hart, for these articles have a certain amount in common. Both authors have based their calculations on conditions in Europe and both wish to eliminate brigades, whereas we require in peace-time an army capable of operating anywhere in the world, and which can be used in small groups for which the independent brigade group is very suitable.

As considerable thought has been put into these articles, I propose to make my suggestions based on the ideas expressed in them. Captain Liddell-Hart's convincingly opposes the custom of the last war to superimpose over fighting units many and vast headquarters. In Normandy, Field-Marshal Montgomery's Headquarters controlled two armies of two and three corps respectively. No corps had more than three divisions, some had only one. These headquarters absorbed a tremendous amount of manpower, were cumbersome, delayed the passing of information and orders and acted as filters. Field-Marshal Montgomery employed liaison officers to cut through these difficulties, but they only partly solved the problem.

Captain Liddell-Hart then proposed that the Army should be organized in 'fives.' Headquarters should control five sub-units or formations, a greater number being too many for efficient control and fewer being uneconomic. He makes a good case for 'odd numbers' of subordinate commands in any formation to improve flexibility and manœuvre and finally proposes abolishing the brigade. He envisages an army commander controlling five divisions each of five battalions and roughly half the strength of the present division.

It is to be hoped that in future the policy will be to reduce the number of headquarters between the Supreme Commander and his fighting troops. The flaw in Captain Liddell-Hart's suggestion is that by weakening the divisions to such an extent more divisions will be required, thus increasing the number of controlling headquarters. To achieve the object of reducing headquarters, the divisions of the future must be roughly equivalent in potential to the present-day division.

Another weakness, brought out by Major Scotter, is the principle of universal organization in 'fives.' The number of subordinates that a commander can control varies at different levels, and, as General Westphal mentions in the footnote to Captain Liddell-Hart's article, tends to get easier the higher the command.

The conclusions that I draw are that to improve flexibility, the ' tree ' of command must be replaced by the ' pyramid ' and the Supreme Commander must have closer contact with and control of the fighting units. This can be achieved by an army headquarters controlling five or more divisions, but each must be a balanced formation capable of independent action, and approximately equivalent to the present-day division.

Major Scotter's approach, starting with the section and working up,is completely opposite to that of Captain Liddell-Hart. He agrees on a platoon being composed of five sections each of a leader and five men, which undoubtedly increases control within the section and the flexibility of the platoon. He builds up from the platoon to a company of four platoons (as opposed to five by Captain Liddell-Hart), a battalion of four companies and a support company (this agrees with Captain Liddell-Hart), no brigade but a division of seven or eight battalions (as opposed to five). The strength of the division is based on four battalions forward in the line with three or four in reserve, which compares with the present-day division having two brigades forward each with two battalions in the line and one in reserve ; the third brigade of the division also being in reserve.

The weakness of Major Scotter's organization lies in the battalion, which is slightly larger than the present-day battalion and is cumbersome. It is neither strong enough to act independently nor capable of working efficiently as a battalion group with other arms attached, and it is unbalanced as less than half the men of the unit are riflemen.

Accepting these articles as a guide, the requirements on which reorganization of an infantry division should be based are as follows :—

(*a*) The infantry division of the future, as today, must be a self-contained formation of all arms and services, and possibly part of a formation of five divisions. Priority should be placed on mobility when organizing the division, to provide the flexibility required by the higher formation, i.e., some medium fire support might be found by army troops, and the division pruned.

(*b*) The division itself must be a balanced weapon with direct control of fighting units at the highest level that communications permit. It must be organized for flexibility.

(*c*) The British Army must be capable of undertaking present-day internal security commitments and, therefore, able to act in formations smaller than a division.

Unlike Captain Liddell-Hart and Major Scotter, who believe that the abolition of the brigade will increase flexibility, I suggest the answer lies in the separation of support weapons from the infantry battalion and restoring ' light infantry.' It is an old fashioned answer which appears at regular intervals in the history of war. The British Infantry holds in high esteem the memory of Sir John Moore whose light infantry became a legend in the Peninsular War, and I would suggest we apply what he taught us to modern conditions.

The power of manœuvre of a battalion is severely restricted by its support element. Less than half the present-day infantry battalion is made up by the rifle companies. The support weapons are powerful, and possess a good range, whilst science continually improves their performance. The main strain of battle is, however, carried by the rifleman who has to be relieved regularly both in attack and defence if he is to retain his efficiency and powers of aggression. It seems, therefore,

a great waste of the advantages of modern development not to group the support elements of the infantry. If these are grouped in a brigade, on the basis of operating with two battalions forward, only the equivalent of two present-day companies are required. At once there is a saving in manpower and vehicles, and flexibility is increased in the brigade which becomes the basic unit of the division.

This suggestion is reinforced when the improvements of modern communications are considered. These make it possible to put the direct control of forward units in the hands of the brigadier. To go higher than brigade, however, and to control direct from division brings about a lack of balance. I think Captain Liddell-Hart is nearer the mark than Major Scotter in thinking five units is the maximum a commander can control in the battle area, but a five battalion division is too small to be effective in Europe against a continental division and does not give the proper punch required by the corps or army commander.

The brigade is an essential formation of the Army which, in peace, must be designed to undertake internal security responsibilities, for which a division is too large and a battalion too small. In war, it is also frequently necessary for a division to detach independent groups. In Burma, this occurred frequently. A battalion group is too ineffective to act independently, whilst more than one battalion must have a controlling headquarters. An intermediary headquarters is, therefore, required between division and battalions. If this is accepted, flexibility must be achieved by other methods than by abolishing the brigade, and I believe this to be possible by substituting for the brigade a regiment composed of ' light ' and ' support ' infantry. The problem is to decide on the number of regiments in a division.

If we accept Captain Liddell-Hart's principle of organizing on a basis of odd numbers, I suggest that three regiments are sufficient. A division could possibly control five, but this would make it too big and ponderous. A division of three regiments each of three light battalions and one support battalion would give a balanced organization and conform to the present day. The company organization within the light battalion would, I suggest, be on the lines recommended by Major Scotter.

In an appendix, I have made out a rough indication of the approximate saving in manpower and vehicles such a reorganization would achieve. A result of this reorganization would be the requirement for more battalions, which would be extremely popular. The manpower saved could either be used indirectly such as by assisting depôts, or directly by widening the scope of the support battalion by adding a carrier platoon, or heavy weapons platoon. It might even be possible to form another regiment.

Such an organization would lend itself to the internal security problems of today. Infantry would be able to concentrate far more on their prime role and would be more flexible. On patrol type of operations the support battalion could be left at base, but when support weapons were required, it would still be possible to operate in battalion groups.

Major Scotter proposed that we should immediately organize a division on the lines he suggested, but this would be impracticable. An article can only lightly touch on the problem. A detailed study would have to be made of all that is involved at a competent centre, such as the School of Infantry, before trying it out on troops.

It is generally agreed that something must be done to improve flexibility, and we will be required to squeeze even more out of the Infantry in the future than we have hitherto, so it may be that by pooling ideas an answer will be found. It is in such a mood I dare to submit my suggestions.

APPENDIX

Saving in Manpower Achieved by a Regimental Organization

1. It is not possible to quote establishments, and so I can only indicate the savings incurred on a percentage basis. For convenience, therefore, let us imagine a battalion today consists of 1,000 men and 100 vehicles.

2. A light battalion would not only save on a present-day battalion by being without its support company, but its headquarters organization would also be reduced. In my comparisons, I propose to reduce this organization by 20 per cent. in manpower and 40 per cent. in vehicles which is the ratio of support company to the battalion as a whole. Comparative figures on this basis are as follows :—

	Present-day battalion		*Light battalion*	
	Men	*Vehicles*	*Men*	*Vehicles*
Four rifle companies ...	570	20	570	20
Battalion H.Q. & H.Q. company	230	38	184	23
Support company	200	42	—	—
Total ...	1,000	100	754	43

3. A support battalion would consist of three support companies equal to two present-day support companies plus an additional headquarters. Its battalion headquarters organization, I suggest, should be roughly equivalent to that for a light battalion, but with double the vehicles for the extra ammunition and reserves of petrol required. A support battalion on this basis would work out as follows :—

	Men	*Vehicles*
Three support companies (each with two-thirds the weapons of a present-day company)	410	86
Battalion H.Q. and H.Q. company	184	46
Total ...	594	132

4. The overall saving within a regiment would work out as follows :—

	Men	*Vehicles*
Three present-day battalions	3,000	300
Three light battalions and support battalion ...	2,856	261
Total saving ...	144	39
Percentage saving throughout infantry brigades	4.8 per cent.	13 per cent.

ANTI-SUBMARINE OPERATIONS OFF THE WEST COAST OF AFRICA

By "G.V."

IT is only necessary to take a glance at a map of the west coast of Africa in order to appreciate the essential features of the problem which faced the naval authorities in protecting the important West African coastal trade routes from enemy submarines from 1944 onwards. By this time, enemy submarine losses in the North Atlantic were becoming increasingly heavy, and the clear waters of the Mediterranean did not hold out much better prospects.

It could, therefore, only be a question of time before Admiral Dönitz decided to make serious attacks on, (1) the convoys sailing between Gibraltar, Freetown, and the Cape; and/or (2) those using the coastal routes between Freetown (naval headquarters in Sierra Leone), Takoradi (Gold Coast), and Lagos (Nigeria); and/or (3) the important coastal trade between Lagos and the mouths of the three large rivers which flow into the delta of the River Niger.

As regards (1) and (2), these convoys were always escorted; but a much more difficult protection problem arose over (3) because it was a physical impossibility to provide any escorts for sailings east of Lagos—the escorts simply did not exist. But, as always happens when certain things do not exist, the Royal Navy learns to 'make do without', and Lagos had to become the terminal point so far as escorts were concerned.

In the case of the *escorted* convoys, our North Atlantic experience stood us in good stead, although of course local conditions had to be surmounted and local experience gained before we could definitely claim to have got the upper hand of the menace.

Once it became clear that one of the coastal escorted convoys was being tracked by enemy submarines, the escorts could count on a certain amount of assistance from aircraft stationed at Freetown and Takoradi and also from the flotillas of M.T.B's stationed at Takoradi and Lagos, but for various reasons both these forms of assistance were rather limited.

But in the case of (3), the problem was greatly aggravated by two geographical facts of over-riding importance, viz.: that each of the three large rivers emptying into the delta of the Niger is protected by a sand bar which a laden vessel could only cross within a fairly narrow time-limit on either side of high water; and, secondly, that the Spanish-owned but German-controlled island of Fernando Po, with its powerful wireless station, lay so inconveniently close to the delta of the Niger.

A word of explanation may here be useful in order to explain how the Germans came to control this Spanish island. Even in peace-time all the plantations were run under the supervision of German overseers and technicians. In addition to this, for several years before the outbreak of the 1939–45 War, an arrangement was in force between Spain and Nigeria whereby the latter shipped 'indentured' native labour from the mainland once every three weeks in order to supplement the labour necessary to work the plantations. This labour was shipped to the island in a Spanish steamer named *Sagunta*, which returned to the mainland with the time-expired labour force within 24 hours of disembarking the newly-recruited labour.

It will be apparent that so long as this arrangement was allowed to continue during war, the Germans had every opportunity of passing their native agents to and fro with hardly the possibility of detection. On top of this, the German 'supervisors' on the island soon found ways and means of controlling all movement in the island. Under the pretext of emergency regulations they persuaded the Spanish officials to introduce a system of passes which the Germans operated to their own great advantage. To quote but one example, the delay experienced by such a 'suspect' as the British Consul in obtaining the necessary pass to visit a certain place or area in the island was such as to ensure ample notice of his intended visit being given before his arrival. Very soon, in fact, it became impossible to obtain any reliable news of what really was going on in Fernando Po.

In spite of strong representations to the Home Government as to the dangers of allowing such a situation to develop unchecked, it was decided that for political reasons nothing could be done about it. At this stage of the war it was considered of paramount importance to do nothing to risk Spain abandoning her neutrality and joining the Axis Powers. If it was considered politically inexpedient to cancel the *Sagunta* sailings, it was clearly out of the question to allow our vessels to risk making use of the territorial waters of Fernando Po, let alone to take any steps to prevent the Germans in control of the island from assisting any German submarines who might wish to make use of the innumerable shallow bays in that island. The Germans were not slow to take advantage of this political decision.

In the light of all these facts, it is surely surprising that the German Naval Command did not show more initiative in attacking the coastal routes between Lagos and the Delta, but five years of intensive submarine warfare had taken its toll of many of their more daring 'aces'; moreover, their larger 'tropicalized' submarines were operating in waters further east, with the result that those working off the west coast of Africa were to some extent of limited endurance.

None the less, the problem set to naval headquarters at Freetown was not easy to solve. For reasons already explained, the sailings had to be unescorted, and the times during any given 24 hours when it would be possible for a laden vessel to cross the river bars were readily ascertainable from any book of tide tables.

The plan adopted was 'independent sailings by diversified routes' and, in spite of the loss of certain valuable ships and cargoes, and of still more valuable lives, it can safely be claimed that the plan proved successful.

These independent sailings were so arranged that no two vessels would be required to cross a river bar during the same high water limit, and no two vessels were allowed to steam along the same diversified route at any one time.

A further glance at the map will show that there was ample sea room to the southward to divert vessels many miles from the coast, but in arranging this it was of course essential to keep the total mileage steamed well within the coal endurance of the vessel in question.

Finally, there was the invaluable safeguard of zig-zagging by pre-arranged tables supplied to the master before leaving harbour; here again, however, it was very necessary to calculate exactly how much extra steaming a particular zig-zag table would involve.

The scheme would undoubtedly have proved even more successful had the vessels employed in this vital coastal trade possessed a greater speed, but the stern requirements of war in other quarters of the globe had reduced their numbers to the

barest minimum ; the important dockyard of Lagos at Apapa was being called upon to carry out repairs and refits to H.M. vessels on a scale which rendered it physically impossible to devote sufficient time adequately to refit these coastal vessels, with the inevitable result that their steaming qualities suffered to an increasing extent.

This additional handicap of slow speed proved a sore temptation to certain masters to evade the zig-zag regulations and steer a direct course—indeed, in the case of the sinking of one of these vessels, her recovered deck-log proved that she had neglected to zig-zag throughout the hours of darkness from the time she left Lagos, but this unfortunate incident at least provided a salutory warning !

In spite of all, the fact that the plan of independent sailings by diversified routes was tactically sound is proved by the fact that at no time was there anything approaching a total hold-up of independent sailings in both directions, although it may now be revealed that at one time the all-important dockyard at Apapa and also the Nigerian State Railways were within four days of exhausting their coal stocks, due to the late arrival from the Delta of three colliers which had been held up owing to submarine activity. But this was the nearest approach to a serious crisis, except when the 82nd Division sailed from Apapa—but that is another story.

THE THIRD INCENTIVE

By Lieut.-Colonel M. E. S. Laws, O.B.E., M.C., F.R.Hist.S.

THERE has recently been some anxiety over the recruiting figures for the Regular element in the Army and it has been suggested that, despite considerable post-war increases of pay, there is a lack of incentive to induce men to make soldiering a career. It is, therefore, of interest to review the historical background to this question and to trace the changes which have taken place in the soldier's reward for service.

As is so often the case when investigating the origins of military customs and precedents, it is necessary to go back to feudal times. Though the terms of service naturally varied from time to time and from place to place, the pay of the mercenary soldier was generally made up of three distinct elements—his ' subsistence ' (providing for his food, clothing, and shelter either in money or in kind), his ' arrears ' (a retaining fee to discourage desertion and issued usually at long intervals), and lastly the chance of obtaining booty. It was the opportunity to win comparative wealth that induced many men to face the hardships and perils of war, just as to-day thousands of citizens hopefully complete football coupons in the hope of collecting £75,000 (tax free) by a stroke of unpredictable luck.

In those days loot normally consisted of money, weapons, clothing, or jewellery taken from the bodies of the slain, from prisoners, or from the hapless citizens of a captured city which had withstood assault. Such fruits of pillage could be quickly disposed of to the numerous dealers among the camp followers who normally accompanied an army in the field. It was a desire to capitalize war booty which led to the practice of giving quarter to defeated enemies who were in a position to ransom their lives by a cash payment to the captor. Similarly, it was to give the soldier an opportunity to acquire loot rather than to damage a hostile cause that prompted military commanders to permit the pillage of a captured city for a specified number of days ; citizens, however, were often permitted and even encouraged to offer a lump sum in hard cash to avoid the horrors of pillage.

When the mercenary bands of feudal times gave way to national standing armies, the soldier's right to the spoils of war continued to be recognized. In the British Army, ' arrears ' were not abolished until about 1760 (but were replaced by *ex gratia* pensions), and even as late as the Napoleonic wars the pillage of captured cities—such as Badajoz—was still permitted on certain occasions. Indeed, Government itself began to take a hand in the business of buying war booty. Thus, by the middle of the XVIIIth Century, the Board of Ordnance normally bought captured weapons and paid scrap metal prices for unserviceable cannon. The C.R.A. of the expedition to Cherbourg in 1758 was careful to send back to Portsmouth not only the 22 brass guns taken in the forts, but also the six church bells, all of which were duly sold to the Board of Ordnance. The C.R.A's claim to the church bells of a captured town had long been recognized, and in fact was not repudiated by the British Government until 1809, when the protest of the citizens of Flushing was upheld for political reasons.

About this time also it became the custom to reward particularly satisfactory conduct on the part of a unit with a monetary award made by a commander. Thus, in 1748, the five companies of artillery which had returned to Woolwich from the Flanders campaign were each presented with a gift in cash by Lord Ligonier. After the Seven Years War the companies, R.A., which returned from Germany were

reviewed on Blackheath by Lord Granby, Master-General of the Ordnance, " who gave to each company twenty guineas and an elegant entertainment to the officers at Dartford : Colonel Phillips (C.R.A.) also gave five guineas to each company."

Whether deliberately intended or not, the effect of such benevolence by senior officers was to replace in some measure the soldier's restricted opportunity for acquiring loot. Already military commanders were beginning to discourage the former practice of unrestricted pillage, which was shown to have deplorable effects on discipline and efficiency, and which was arousing resentment in a more enlightened public. A further step in the right direction was later taken when certain commanding officers instituted their own regimental medals for good conduct, gallantry in action, and even for skill in musketry. Belatedly, the Government supported this movement by the issue of war medals to men who had been under fire and also by the award of medals for good conduct and for gallantry in action. These last carried substantial cash bounties or annuities which appealed to the recipients in those days more than did the actual medals. By the middle of the XVIIIth Century, therefore, the original ' subsistence ' and ' arrears ' had been replaced respectively by regularly issued pay and allowances. There remained the third of the original incentives, namely war booty, the opportunity for acquiring which had greatly diminished.

Though the traditional right of the soldier to some share in the spoils of war was not disputed, by the middle of the XVIIIth Century the British Government was already taking practical steps to control, rather than to limit, pillage. Instead of permitting unrestricted looting by individuals, Authority attempted to ensure that all booty was pooled and was later distributed to all concerned on a share basis according to rank. This was in effect an imitation of the methods long used in the Royal Navy for the disposal of prize money. Thus, in 1762, the disposal of the expected booty of Manilla was settled in principle at the time the expedition was planned in London, and the details were agreed upon—not without much acrimonious correspondence between interested parties—before the expedition set sail from Madras. Indeed, it was in India that the working of the prize fund was most highly developed, chiefly because the opportunities for acquiring valuables were more numerous there than they were in Europe.

The long wars with Revolutionary and Napoleonic France produced numerous opportunities for the Royal Navy to acquire booty in the form of prize money, but surprisingly few for the British soldier. The Peninsular campaigns were mostly fought in friendly, and indeed allied, countries and the Duke of Wellington took particular care not to arouse antagonism in the civilian population by preventable looting. Though there was doubtless a good deal of petty pilfering by small parties of men and an occasional orgy of looting as at Badajoz, generally speaking the Army gained little in the way of booty from its long and hard fought campaigns which ended in the collapse of Napoleon's empire.

In the long years of peace which followed Waterloo there was no opportunity of the soldier acquiring booty ; nor was the Crimean War any help in this respect. Some minor expeditions, such as those to Abyssinia, Ashanti, and China, produced certain spoils of war, but these were often in the form of trophies rather than of hard cash, and in any case only a comparatively small number of troops were concerned. The South African and the 1914-18 and 1939-45 Wars saw the end of organized prize funds and the soldier's traditional right to the spoils of war.

There was, however, one curious revival of the old custom whereby the soldier was rewarded for particularly meritorious conduct. During the 1914-18 War the

Lord Mayor of London offered £500 to the first person or persons instrumental in bringing down a Zeppelin over the British Isles. Following the destruction of L.Z. 15 in the Thames estuary on the night of 31st March, 1916, the Officer Commanding A.A. Defences, Purfleet, claimed this reward on behalf of his unit. The War Office, on the recommendation of the G.O.C.-in-C. Home Forces, decreed that the prize should be shared by the whole of the Thames A.A. defences, in consequence of which the Lord Mayor had 353 gold medals specially struck, and these were presented instead of the cash prizes.

The old prize money has been replaced in recent times by the war gratuity, irreverently though quite inaccurately known as ' blood money.' Though shared by the Regular professional soldier, the war gratuity was intended primarily for the conscripted civilian as some small recompense for the disturbance of his normal life caused by his temporary service in the fighting forces. It was calculated, as was the old prize money, on a *pro rata* basis by rank and by length of service, but it would obviously only be authorized for major wars fought by a largely conscript army and not for the innumerable minor campaigns which are chiefly the concern of the professional fighting man.

The true compensation for war booty is the pension, or a gratuity in lieu, or a combination of both. Whereas in the early days of the Regular Standing Army, a pension was entirely an *ex gratia* award usually only conceded to an applicant who was totally incapacitated by wounds or chronic ill health, it is to-day a statutory entitlement dependent only on rank and length of satisfactory service.

It will be seen, therefore, that the original rewards of the soldier in the form of arrears, subsistence, and booty have been replaced respectively by pay, allowances, and pension. Two hundred years ago the first two items were disgracefully small, but the third was limited only by opportunity and private enterprise. Under modern conditions, where the emphasis of public demand is placed on security for old age at the hands of the State, the pension has replaced war booty as the third incentive.

THE INTERNATIONAL SITUATION[1]

By A. K. CHESTERTON, M.C.

THE FAR EAST

INDO-CHINA

THE war in Indo-China is over. By an agreement reached a few hours after the dead-line set by M. Mendès-France, the French forces are to be withdrawn from all territory north of the 17th Parallel, thus creating in Tongking the new Communist State of Viet-Minh. Efforts had been made by Paris to establish the line of demarcation on the 18th Parallel, but Mr. Chou En-lai, the Chinese Foreign Minister, no doubt for bargaining purposes, claimed for his protegé territory very much further to the south, so that the decision to fix the 17th Parallel as the Viet-Minh frontier could be hailed as a compromise. Despite the understandable relief in France at the end of a long and unrewarding war, no good purpose is to be served by pretending that the settlement is anything other than a major reverse for the French nation, which for nearly eight years has fought to maintain the territorial integrity of the whole region against Communist encroachment.

What next? It has been argued that the agreed line of demarcation will leave the French in effective control of the road to Laos, but as both Laos and Cambodia are destined to be outside the French sphere it is permissible to ask wherein lies the profit. Many pious hopes have been expressed in official circles that the Geneva settlement will lead to a "permanent" peace, and it certainly seems improbable that the shooting war in the foreseeable future will be resumed. But the political initiative will palpably be with the Communists, who are certain to reverse the Clausewitz doctrine by pursuing the war by other means. No effort will be spared to secure the unification of the whole of Indo-China under Communist auspices at the proposed elections in 1956. The terms were probably the best that could be obtained, but France in particular, and the West in general, have little enough reason to celebrate.

FUTURE DISPOSITIONS

The crowning irony of the war in Indo-China was the outburst at Geneva of Mr. Tran Van Do, Foreign Minister of Vietnam, who told the conference that his country would have to dissociate itself from the proceedings, as it could not countenance a policy of partition. This followed a Note which he had handed to M. Mendès-France complaining about the withdrawal of French forces in the Red River Delta, "abandoning positions without fighting and in spite of protests." The Vietnamese Government evidently prefers to forget that when Bao Dai a couple of years ago assembled his notables in Vietnam to receive their advice they passed a unanimous resolution calling for the immediate withdrawal of all French forces from Indo-China. There was a comic song of the 'thirties which had as its refrain: "When you get what you want, you don't want what you get." The Vietnamese, it would seem, are having at least a foretaste of that experience.

Indeed, the experience is by no means confined to the notables of Vietnam. By regarding, or professing to regard, Bao Dai and not the French Government as the wielder of effective power against the advance of Communism in South-East Asia, most of the Foreign Offices of the world find themselves confronted by the

[1] As deduced from reports up to 21st July.

logical result of their constant pressure on the French to relinquish sovereignty in Indo-China. Whatever may be proposed for Vietnam south of the 18th Parallel, the authority of France in Indo-China has been so thoroughly undermined that it is difficult to imagine that she will have the will or the prestige to give form and coherence to such elements as desire to resist further Communist encroachments. Who will succeed her? The Vietnamese palpably cannot do the job themselves. Nor is it probable that the peoples of Cambodia and Laos, left to their own devices, can hope indefinitely to keep Communism at bay.

Geneva Stratagems

Western relationships during the Geneva Conference have been needlessly disturbed by what was in fact the purely academic question of whether or not the *de facto* Government of China should be admitted to the United Nations and accorded a seat on the Security Council. India and other Asian countries stressed the desirability of taking this action, and seem to have convinced some European Governments, including our own, that it would greatly ease existing tensions. The New Zealand Prime Minister went so far as to frame a definite proposal, but when the American reaction became apparent he explained that although his Government adhered to the principle it did not deem the times propitious for carrying it out. That was the general attitude of the non-American members of the Western alliance. It is understandable that President Eisenhower and the State Department, committed as they are to the support of Chiang Kai-shek, and having to take into account the inflamed state of American public opinion, should have opposed the proposition with no little vigour.

What made the situation even more unreal was the probability that Mr. Chou En-lai did not attach any undue importance to the exclusion of his Government from the United Nations. The Soviet Union, by its use of the veto, can paralyse any action contemplated by the Security Council, while in the General Assembly the addition of one seat for the Communist *bloc* would in no way alter the balance of voting power. It is much more likely that Messrs. Molotov and Chou En-lai looked on with sardonic amusement at the rumpus created by what was, in the circumstances of the time, a fictitious issue. The reality for them was the French withdrawal in Northern Vietnam.

There is also reason to think that the Communists employed the subtle tactic of falsely suggesting that there was incomplete accord between Moscow and Peking, so that any concessions made to China would have the effect of withdrawing China further from the Soviet orbit. How far the ruse succeeded cannot be known, but there is little doubt that it was tried.

Korea

The Geneva Conference early came up against a stone wall in its attempts to reach a peace settlement in Korea. It is now obvious that one of the reasons which prompted the Chinese to seek a truce in that country was the realization of the much richer prizes to be won in Indo-China. Viet-Minh's recently demonstrated power to take the field as a formidable army equipped with heavy weapons could scarcely have been achieved had China been under the continuing necessity of concentrating her resources for the use of her own and North Korean armies.

The position reached in Korea is almost exactly that of Germany in Europe. Both countries are partitioned. From neither side of the partition will there be any

voluntary withdrawal, lest that provide the opportunity for the other side to secure to itself the adherence of the whole. Both sides insist that they want nothing better than " free elections " whereby Koreans—like Germans—may determine their own unified national destiny, but as by " free elections " they mean diametrically opposite things, unification must await a decision such as no mere conference by itself can possibly reach. It is not inconceivable that the period of waiting will be longer than the lives of most of us. Ironically enough, that is to look upon the bright side.

Enclaves in India

It was to have been expected that France's misfortunes in Indo-China would greatly weaken her hold on the possessions remaining to her in India. Mahé, on the Malabar coast, after being blockaded by pickets, was suddenly surrendered when the French administrator appeared at a public meeting held by the leader of the " Liberation volunteers " and announced the news in person. Similar picketing activities applied to Pondicherry and Karikal have been largely anticipated by the known decision of the French Government not to contest the issue. The French in Asia have understandably lost heart.

Not so the Portuguese. Dr. Salazar's Government has shown not the slightest disposition to relinquish Goa, which is held to be an integral part of Portugal. On the contrary, when Mr. Nehru recently protested against the arrest of twenty Goanese, Lisbon replied in these terms: " As the Portuguese Government clearly and incisively declared at the opportune time, activities fomenting the annexation of Portuguese territories to other States are illicit and constitute a crime in our juridical order. When they occur in national territory, and are practised by Portuguese citizens, it is exclusively a matter for the Portuguese authorities, and any intervention by foreign States is therefore inadmissible. The protest therefore cannot be entertained." Such a situation is not without its irony. The irony would be increased were Portugal ever to call upon London to carry out the Anglo-Portuguese Treaty of 1642 in which " His Majesty of Great Britain promises . . . to protect all conquests and colonies to the Crown of Portugal and against all his enemies as well as future and present."

THE MIDDLE EAST

Persia

Russian allegations that Persia intends to join " an American-sponsored anti-Soviet pact " have met with a firm reply by Teheran. The Persian Government, while repudiating any intention to take part in an alliance calculated " to harm Soviet maritime security and territorial integrity ", has told Moscow in an official Note that it reserves the right to participate in regional defence organizations. This is the first clear hint that plans are in hand to fill this particular Middle Eastern gap in the Western security system, which will then form a sweeping arc around the Communist countries from Japan to Norway. American or American-supplied bases already exist in Japan, Formosa, Siam, Pakistan, Saudi Arabia, Turkey, Greece, Yugoslavia, Malta, Libya, French North Africa, Spain, Portugal, and the countries in Western Europe. Britain maintains or sponsors military establishments in Hong Kong, Malaya, Iraq, Jordan, Cyprus, Cyrenaica, Malta, and Gibraltar, all or any of which could be reinforced after the impending evacuation from Suez, while France presumably will retain for some time a military foothold in southern Indo-China. Thus once Persia is enlisted, only India and Burma will stand outside the defensive arc.

The military value of supplying modern armaments to a country like Persia is doubtful. As the decisive factors in a third world war would certainly not lie on the Asian periphery of the Western system, tanks and artillery entrusted to some of the Asian Governments would be hostages to fortune. Equipment sent to Chiang Kai-shek was used not only to drive him from the mainland, but also to keep the Viet-Minh guerillas in the field. But no doubt such military aid has a political value, enhancing the local prestige of the Governments which receive it.

In his despatch reporting the Persian reply to Moscow the Teheran correspondent of *The Times* added this interesting piece of information: "Public opinion has no illusions about the Soviet attitude towards Persia, the neutrality of Persia notwithstanding. Furthermore, the Americans are expected to use their influence, moral and otherwise, for filling the gap in the Pakistan-Turkey defence pact. The recent Soviet *aide memoire* may well precipitate the Persian decision to go all out for the West." That would seem to support the thesis maintained by the present writer from the first that the great oil battle of the last three years was in all essentials a fight for Persia as a sphere of influence, not between East and West, but between West and West.

The projected settlement of the oil dispute is no more favourable to British interests. "Anglo-Persian" is reliably reported to have waived its claim for future profits covering the remaining forty years of the agreement cancelled by the Persian Government in 1951. This has been done, according to *The Times*, partly as a gesture of good-will towards Persia and partly because of arrangements between the A.I.O.C. and other members of the consortium. 'Good-will' in such a context possesses a curious ring, the more so because, as the newspaper further reports: "The Abadan refinery is to produce high-grade products which, though smaller in quantity, will give Persia a sizeable *dollar* return." I have taken the liberty of italicizing the word I wish to stress.

YEMEN

During the last few weeks there have been many dangerous clashes on the Yemen-Aden Protectorate frontier. Not only Yemeni tribal guerillas but Regular troops have made incursions into British protected territory, leading to a British Note which accused the Yemen Government of "fomenting rebellion" among the sheiks and sultans. The explanation put forward by many British newspapers was that the Imam of Yemen was pursuing his claim to sovereignty over the whole colony and protectorate, and had stepped up activities in the hope of frustrating British plans for a new federal constitution. While such ambitions are known to inhabit the Imam's breast, to attribute the present clashes entirely to them is surely a little artless.

Major Saleh Salem, Egypt's anti-British Minister, who distinguished himself by performing Dervish dances in the campaign to secure a pro-Egyptian majority in the Sudan elections, has been on an official visit to Yemen. After his return, the newspaper *Akhar el Yom* declared that Major Salem had visited the scene of the "latest British aggression" and had "inspected ruined houses and encouraged people who resisted the attack." It announced that an Egyptian military mission would "train the Yemeni Army in modern warfare by the introduction of artillery, planes, and tanks." As Egypt is on the list to receive American military aid, whence is it proposed to secure such equipment for the Yemeni Government?

EGYPT

The outlines of the proposed settlement of the Suez Canal dispute are now known. Great Britain has conceded the Egyptian Government's demand that all British Service men—or, at any rate, all Service men in uniform—be withdrawn from the area within an agreed period. It is hoped to hand over the base to civilian contractors for caretaking purposes until such time as all title to it is renounced, but as there is doubt about whether contractors willing to undertake the work can be found in Britain, the alternative may be to leave British Service personnel there in civilian clothes. According to the diplomatic correspondent of the *Sunday Times*, there is now a close alignment between British and American views on the terms that the Anglo-Egyptian agreement should contain.

The same commentator writes: "United States financial aid to Egypt through the use of unallocated military funds may play an important role in bringing about an Anglo-Egyptian settlement of the Canal Zone base dispute. Such aid would help Egypt to contribute to the cost of civilian technicians who would keep the base in good order after British Service personnel had left." As the United States Government, which already has a large air base in Tripolitania, is at present negotiating with the Libyan Government for bases in Cyrenaica, one wonders whether Egypt is to be the only country in the Middle East where there are no such establishments.

Press comment in Britain has found "extremely important" a reported concession by Egypt to allow the Suez base to be "reactivated" in the event of an attack on Turkey. The importance is considerably diminished when one bears in mind that such an attack would lead the West at one bound, with or without permission, to take any action which military necessity might demand.

FRENCH NORTH AFRICA

French embarrassment in Asia has led, not unnaturally, to a worsening situation in Morocco and Tunisia. There have been in both countries terrorist activities of the kind which is all too familiar in the modern world. Although the leaders of the Istighal, Morocco's separatist movement, have been exiled, it would seem that the chain of command has been carefully organized down to gang level, somewhat on the Mau Mau pattern. No less familiar is the economic boycott, enforced wherever possible by intimidation on the lines of that employed in Nairobi by Mau Mau and by dissidents in Buganda. The many concessions made by the new Sultan seem not to have had much success in abating the terror.

In Tunisia, where much the same situation exists, many French inhabitants have been alarmed by the reported decision of the Mendès-France Government to start a chain of concessions leading to complete self-government, and there is a disposition among them to organize a desperate resistance to any such policy. Other French residents, anxious only to see an abatement of insurgent terror, are reported to be ready for almost any compromise. It seems certain that during the next few months the French Government will have to make a drastic decision, one way or another, as to the line it proposes to follow in both countries. Fortunately, Algeria, unmoved by the turbulence elsewhere, remains tranquil and—as far as one can judge—well content.

EUROPE

At the time of writing, the fate of the projected European Defence Community still awaits the decision of the French Assembly. Should the treaty be ratified, which seems improbable, full effect will be given to the Bonn Conventions and Western Germany will achieve the formal status of an independent nation, limited in sovereignty only in as far as her rearmament must take place within the E.D.C. framework. Should ratification be refused, the intention of the British and United States Governments is to divorce the treaty from the Bonn Conventions and restore all Germany's sovereign rights except the right to rearm. Such a state of affairs obviously could not long continue. Dr. Adenauer, perhaps to bring pressure to bear on Paris, declared that if E.D.C. did not come into being Bonn would be obliged to create a national army. He added that Germany did not want to pursue this course—a somewhat 'diplomatic' statement. Sovereignty without armed forces is not sovereignty in any true sense: indeed, the Gaullist opposition to the Defence Community is based on the belief that effective sovereignty would be destroyed even by the controls which that Community would impose. There is no reason to suppose that the Germans, a proud people, are any more indifferent to these considerations than the French. They support E.D.C. for no other reason than that a dozen or fourteen German divisions in being are better than no German divisions at all.

As the plan for a European army from the first has encountered such obstacles, it is not easy to believe that the army itself, were it to be formed, would make for Franco-German accord. The probability is that it would create more problems than it solved, even though at the outset it would certainly dispose of a major political difficulty by furnishing auspices for German rearmament. In any event, as I have suggested, that rearmament cannot be indefinitely deferred. It would be surprising if provisions were not made for it when Sir Winston Churchill visited Washington. Any such arrangement would probably follow the deliberations of the joint study groups appointed to examine the problem. There is no doubt whatever in many minds, including that of the present commentator, that Franco-German relations will ultimately be the happier if a German national army is created and a military alliance takes the place of the ill-fated E.D.C. treaty.

CORRESPONDENCE

(Correspondence is invited on subjects which have been dealt with in the JOURNAL, *or which are of general interest to the Services. Correspondents are requested to put their views as concisely as possible, but publication of letters will be dependent on the space available in each number of the* JOURNAL.—EDITOR.)

STREAMLINING THE INFANTRY DIVISION

To the Editor of the R.U.S.I. Journal.

SIR,—An article in the JOURNAL of November, 1953, entitled *Streamlining the Infantry Division* by Major W. N. R. Scotter, suggested several interesting changes in the structure of the infantry division. The author examined in detail the structure of every infantry formation, from the section of ten men, to the division of three brigades, and suggested numerous radical alterations. These changes aimed at economy in manpower, and increasing the effectiveness of the Infantry. This healthy attitude of self-criticism is to be approved so long as the author confines himself to the infantry battalion. However, when he comes to recommending the abolition of brigade headquarters, and the reorganization of the division on a seven battalion basis, it is time for some counter-arguments to be raised.

It is with his suggested changes in brigade and divisional organizations that I wish to deal in this reply.

First, the author seems to be considering the Infantry as if in a watertight compartment, whereas the division is a complex, integrated structure. The help which supporting arms and services can give the Infantry is most conveniently brought to bear by decentralization and grouping. Especially in the case of the Royal Armoured Corps and the Royal Artillery, for instance, firm affiliations at levels below division are essential in order to obtain the maximum value from their support. It is only necessary to cite the battle grouping of the armoured brigade working with the infantry division to demonstrate this.

Second, I find Major Scotter guilty of not looking forward to the likely conditions of the next war, in his passion for centralization. So far from brigade headquarters being an unnecessary block in the chain of command, in this era of wide fronts, the divisional commander must be able to decentralize control of his division. In the confusion of hard defensive battles and retreats, with uncertain communications, and the temporary isolation of parts of the battlefield, I cannot see the G.O.C. retaining effective control of his seven battalions, artillery, and services without the help of brigade commanders, and the communications at their disposal.

Third, Major Scotter postulates the success of the German system of grouping six or seven battalions under one divisional headquarters, a system which he admits was forced on the Germans, doubtless unwillingly. In the latter stages of the last war, admittedly, when German armies were everywhere retreating, and trying to stop the rot on all fronts at once, it may have been valuable and speedy for laying on rearguards, local small-scale counter-attacks, etc. But such an organization is not versatile, and could not, for example, begin to take on the complexities of an elaborate break-in battle, when additional specialized troops come under command.

Fourth, I disagree strongly with the author's suggested abolition of the brigade from an artillery point of view. The Germans were a bad example for him to quote in this connection, for their field artillery in 1939–45 was inflexible and poorly handled. In spite of some individually good weapons, it was nothing like the battle-winning factor that ours became. Much of the German artillery was scattered about the division as infantry guns on battalion establishments, incapable of being used in mass. Our divisional artillery, on

the other hand, is capable of complete centralization under the C.R.A., or one of the field regimental commanders; it can also be decentralized to battalion/battery level in, say, an advance or rear-guard action. It really seems then that there is nothing to be gained from organizational changes in the divisional artillery so long as the 25-pounder remains in service.

Again, it seems to me that in abolishing brigade grouping he is destroying an integrated system of fire-support, and a marriage of fighting arms that was evolved in war and proved again and again. The basic essential is a good battalion/battery tie-up. Going up a step, batteries must be grouped somehow in order to concentrate their fire, and field regiment with infantry brigade has up to now proved a convenient and workable affiliation. Moreover, it is at brigade level that the divisional counter-bombardment organization does some of its most valuable work, and it is largely through its sensitivity at this level that effective retaliation is called for and provided. So can the Royal Artillery accept Major Scotter's suggestion to abolish brigade headquarters? I submit that the answer is a firm no.

In resisting the proposed change the Gunners are not being stodgy and unprogressive. Their present regimental organization was only arrived at in 1942 after several other systems (three-troop battery, etc.) had been tried and found wanting. Locating batteries and air O.P. flights were also born of the war. Since 1945, there have been full trials of a four-battery regiment, but to no purpose. The three-battery, three-regiment organization seems to be the best yet devised. It suits the Artillery technically, and the Infantry tactically. The Gunners will require a lot of convincing before they agree to the changes above battalion level suggested by Major Scotter.

My fifth criticism of the "seven battalion" division is that it appears to ignore the value of the brigade commanders in training and administration. Divisions are not always fighting battles, yet the burden of co-ordinating and supervising their daily lives has to go on. In his new chain of command, Major Scotter does not say who will carry out the administrative duties at present done at brigade level; nor does he provide any additional A/Q staff at divisional headquarters.

Sixth and last, there is the question of general strategy in a hot and a cold war. A brigade group detached for a certain operation is often more economical than using a division, and a division less a brigade can still be effective operationally. I doubt whether the same could be said of Major Scotter's "seven battalion" division after an *ad hoc* brigade had been formed from it.

The proof of the pudding surely is that we won the last war, not the Germans, and we won it with eventually better tactics, evolved after trial and error. Major Scotter's suggestions below battalion level do not seem at all unreasonable to 'another arm.' Above that level though they seem to give the divisional commander a very poor deal, making him personally responsible for divisional fronts the same size with the same communications, yet without the local assistance of brigade commanders. Major Scotter's G.O.C. will not have seven subordinates to consider but at least ten, since the C.R.A., C.R.E. and O.C. Divisional Regiment Royal Armoured Corps, must be included in tactical planning. While criticizing Major Scotter's suggestions above battalion level, however, I agree entirely that brigade headquarters is at present grossly swollen and should be reduced to its tactical essentials of a co-ordinating and supervising battle headquarters plus an administrative element. However, the problems of command, control, and support which Major Scotter ignored in his article are too formidable to be dismissed, and in my opinion, tip the scale towards the need for retaining some form of brigade headquarters.

F. G. ROBSON,
Major, R.A.

3rd March, 1954.

BRITISH COMMONWEALTH NAVAL OPERATIONS DURING THE KOREAN WAR—PART VII

SIR,—I have only recently received my February edition of the JOURNAL, but if it is not too late I would like to make a brief comment in the interests of historical accuracy in the VII Part of the Korean War Naval Operations.

H.M.S. *Tyne*[1] was in fact the H.Q. Ship of the Admiral Commanding the British Commonwealth Forces, relieving H.M.S. *Ladybird* in that duty in April, 1953. Although a limited amount of base assistance was given, the *Tyne* was not manned for depot ship duties. She was based at Sasebo, but went up the west coast of Korea on two occasions.

A. J. F. MILNE HOME,

14th May, 1954. *Captain, R.N.*

AIR STRATEGY

SIR,—A few words may be expected from me in reply to the two letters on Air Strategy in your May number.[2] In the first, Mr. R. G. Worcester says that I " support the contention that an ' antidote ' could be found for the atomic type of weapon ". All I did was to support in general terms a statement by an air chief marshal who wrote hopefully on the subject. Obviously no antidote could be more than partially successful, but it was pointed out by the air chief marshal that we did find at least a partial antidote for all the worst horrors of the past " and so have survived ". I contend that, if prepared for in the right way, we should not give up hope of surviving an atomic war. At the end, this writer unjustifiably misquotes me, thus :—" . . . he says a new war *would* drag on for *several* years ". My words were " . . . it *might* take us one, two, or even three years to achieve final victory." (My italics.)

Air Marshal Saundby discusses my 13 suggested principles and seems to disagree flatly only with two or three of them. Part of his objection to my No. 2 is worded thus :— " I suggest that we could hope to survive only if the combined efforts of the N.A.T.O. bombers were directed against the enemy's vital points, carrying the war into his skies and keeping it there."

This seems sound enough, but does he realize that my " strategic defensive " (which some airmen seem to dislike) would naturally embody unlimited counter-attack and also tactical offensives such as he here describes.

Where we really differ, I suspect, is on the selection of " the enemy's vital points ", which he has never stated very clearly. I say, " attack, directly or indirectly, the armed forces of the enemy ". He says, " the classical doctrine . . . is now out of date ".

But what is to replace it ? The impression one gets from a number of public pronouncements, on the B.B.C. and elsewhere, is a new doctrine somewhat as follows :—

(*a*) If we can make sure that an atomic war, with H bombs, etc., would be utterly horrible for both sides, we can feel reasonably sure that no one will ever start one.

(*b*) The best way to win an atomic war quickly is with murder-bombing that will kill or mutilate millions of the enemy's men, women, and children in his great cities.

I much regret that I cannot come nearer to agreement, but I find it difficult to support either of these theories.

R. P. ERNLE-ERLE-DRAX,

6th June, 1954. *Admiral.*

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[1] Pages 104 and 105.

[2] Pages 283–285.

LECTURE DISCUSSION

SIR,—I see that on page 203 of the May, 1954, JOURNAL, it may be inferred from my second remark as published, that I advocate the abolition of railways! This, of course, is not the case. What I wish to see abolished are railway troops, and reference to my first remark on the same page makes this quite clear.

L. V. S. BLACKER,
Lieut.-Colonel.

8th June, 1954.

ARMOUR IN THE LAND BATTLE

SIR,—I have read with the greatest interest Major-General Pyman's fine lecture of 10th February last on *Armour in the Land Battle*.[3]

But in his review of future possibilities the reference to the use of atomic weapons left me gasping! Does he really suppose that after an atomic explosion the affected area could immediately be traversed by armoured vehicles?

I submit that the main purpose of the atomic bomb, in any future war, must be to render territory *behind* the advancing enemy so radioactive that no living being could either cross it or enter it. It would be impossible for any force to advance with all its lines of communications entirely disrupted and all its food and supplies contaminated.

The function of armour must surely be to deal with enemy formations isolated into sections by atomic bombing and, at the same time, completely cut off from their base.

Yet I can find no reference to this aspect either in the lecture or in the discussion which followed.

CECIL F. MILSOM,
Major (Retd.).

10th June, 1954.

SIR,—I was most interested to receive Major Cecil F. Milsom's letter about my lecture on 10th February.

Atomic bursts can be of three types, namely, air burst, surface burst, or sub-surface burst. I based my remarks concerning future possibilities on the fact that troops advancing quickly in the wake of an atomic *air burst*, after the manner I proposed, are in no danger of nuclear radiation.

Major Milsom advocates the use of the atomic bomb as a weapon of interdiction and I agree with him that that will probably be one of its main uses. But the target will have to be carefully selected to obtain worthwhile results.

In my lecture I was restricting my observations to armour exploiting atomic weapons in the tactical field. Should armour be able to break through the enemy resistance as I proposed, then it would soon pass into " the green fields beyond " and achieve strategical results such as Major Milsom suggests.

H. E. PYMAN,
Major-General.

17th June, 1954.

TRENCH GASCOIGNE SECOND PRIZE ESSAY, 1952

SIR,—I can enlighten your correspondent, Lieut.-Colonel J. E. Reid, on the point of Japanese penetration into what is now East Pakistan.[4]

On 4th July, 1944, the Japanese occupied the village of Mowdok in the valley of the Sangu River, which they reached from the Kaladan Valley in Arakan.

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[3] See JOURNAL for May, 1954, page 219.
[4] See JOURNAL for May, 1954, page 282.

Mowdok was a few miles inside East Bengal: our troops had withdrawn for the monsoon and the main purpose of the occupation was probably propaganda for the "Indian National Army", which kept a company there until after the monsoon. At no other point did the Japanese enter India from Arakan.

C. H. M. TOYE,
Major.

22nd June, 1954.

LESSONS OF WAR

SIR,—As the volumes of the official histories appear it becomes increasingly evident that there are more lessons to be learnt from the last war than from any previous war.

It is evident that for a long time we underrated our enemy and, as the war was being fought with new weapons, there is perhaps some excuse for some of our mistakes.

But it is astonishing that, after our experience in the 1914–18 War, we so underrated the skill of the German cypher-breakers that we allowed the Germans to read our signals from the outbreak of war until August, 1940.

This was a failure which undermined our war effort to a far greater extent than any of the tactical and strategical failures about which so much has been written.

How many ships and lives were lost through this failure is a matter of conjecture, but that they were considerable is evident from the German comment: "A great set-back for German naval strategy at this time was the change by the Admiralty of naval codes and cyphers. The insight into British operations, which had lasted so long, thus came to an end. Knowledge of British movements had spared German vessels many a surprise encounter with superior forces, and this had become an element in operational planning".

In the 1914–18 War we knew that the German cryptographers were very skilful, and we watched like cats for the slightest indication that they had broken one of our cyphers or codes. Any movement of a German ship which followed closely on and seemed to be connected with a movement of our own ships at once aroused suspicion, and if this occurred again we knew it was time to change a cypher, code, or signal book.

We must have forgotten this one vitally important lesson of the 1914–18 War.

W. M. JAMES,
Admiral.

3rd July, 1954.

GENERAL SERVICE NOTES

NORTH ATLANTIC TREATY ORGANIZATION

PROGRESS MADE BY THE N.A.T.O. DURING THE PAST THREE YEARS.—Speaking in London on 8th June at a dinner given by the English-Speaking Union to mark the tenth anniversary of the Allied landings in Normandy, General Alfred M. Gruenther, Supreme Allied Commander in Europe, said, *inter alia*, that :—

(*a*) The forces that General Eisenhower had three years and two months earlier have been increased numerically some three to four times, and from the standpoint of effectiveness the increase has been greater still.

(*b*) There are now between 90 and 100 divisions for the defence of Europe in varying degrees of readiness—some on D-day, some on D plus 15, others on D plus 30.

(*c*) The increase in air power has been probably even greater. General Eisenhower had 15 airfields, none capable of taking jets. Now there are 120 airfields, and every one can accommodate jets. By the end of this year that number will be further increased.

(*d*) Now that the N.A.T.O. has been reinforced it gives a certain insurance against an accidental or miscalculated war.

(*e*) We have the B-47, a long range aircraft to which the Soviet now have no answer. It can fly so fast and so high that there is no defence against it in 1954. It can drop atomic bombs with accuracy.

CHIEF TECHNICAL ADVISER ON CIVIL DEFENCE.—It was announced on 21st April that Wing Commander Sir John Hodsoll had been appointed Chief Technical Adviser to the N.A.T.O. Civil Defence Committee.

EUROPEAN DEFENCE COMMUNITY

The treaty establishing the European Defence Community was ratified during the first half of 1954 by Belgium, Western Germany, the Netherlands, and Luxemburg. France and Italy, the two other countries concerned, had not taken similar action at the time of writing.

SOUTH-EAST ASIA

FIVE-POWER STAFF TALKS.—Staff talks were held in Washington from 3rd to 11th June between representatives of the United Kingdom, Australia, New Zealand, France, and the United States, who were represented respectively by Field-Marshal Sir John Harding, Lieut.-General Sir Sidney Rowell, Major-General W. G. Gentry, General Jean Valluy, and Admiral Robert Carney. A brief statement issued at the end of the first day's meeting said that the representatives were discussing security matters of common interest in the south-east Asian area, and that the conversations would not commit any of the nations represented.

DEFENCE DISCUSSIONS IN SINGAPORE.—Officers from the United Kingdom, Australia, France, and the United States took part in discussions at Singapore early in July on matters connected with defence problems in South-East Asia.

D-DAY—TENTH ANNIVERSARY COMMEMORATIONS

Representatives of eight Allied nations, headed by M. Coty, President of the French Republic, spent two days commemorating at different points in Normandy the tenth anniversary of the Allied landings in 1944.

The Allied delegations were headed by Sir Gladwyn Jebb, Britain ; Mr. Jean Desy, Canada ; M. Spaak, Belgium ; Mr. Staf, Holland ; M. Als, Luxemburg ; Hr. Antword, Norway ; and Senator Cabot Lodge, United States. The British Service representatives accompanying Sir Gladwyn Jebb included Marshal of the Royal Air Force Sir John

Slessor, General Sir John Crocker, Air Chief Marshal Sir James Robb, Admiral Sir Geoffrey Oliver, Air Chief Marshal Sir Francis Fogarty, and Air Chief Marshal Sir Basil Embry.

The President of the Republic arrived at Bayeux with M. Laniel, the Prime Minister, on the afternoon of 5th June, and attended a solemn *Te Deum* at the Cathedral.

The representatives then took the road to Arromanches, where the President passed in review troops of eight nations before cutting the symbolic ribbon and inaugurating the new *Musée du Debarquement* which has been formed there to commemorate the landings. Sir Gladwyn Jebb read a message from Sir Winston Churchill. The President of the Republic spoke in reply to Sir Gladwyn Jebb and other Allied representatives.

On 6th June, after a visit to the Canadian cemetery at Beny-Riviers and the new American cemetery of St. Laurent-sur-Mer, above Omaha beach, the representatives travelled to Carentan, and thence to Utah beach, where the President laid a wreath of red roses at the Memorial and passed in review the Allied guard of honour, while a mixed British, American, and French naval force lay offshore, and American aircraft based in Britain flew overhead. Here, M. Coty, who the previous day had generously praised the British war effort, paid a similar tribute to that of the United States.

GREAT BRITAIN

Middle East Headquarters to Move to Cyprus

The Ministry of Defence announced on 23rd June that it is the intention to move the joint headquarters of Middle East Land and Air Forces to Cyprus in due course. The headquarters of the General Officer Commanding British troops in Egypt at Ismailia is not affected.

The date of the move is as yet undecided. In the meantime, construction work on the site for the joint headquarters in Cyprus is proceeding.

Guided Missile Development

A joint communiqué was issued in London and Washington on 14th June on talks in Washington between Mr. Sandys, Minister of Supply, and Mr. Charles Wilson, United States Secretary of Defence. It said :—

" The talks, which have lasted four days and included separate meetings with representatives of the United States Army, United States Navy, and United States Air Force, have covered a number of matters of mutual interest in connection with the development and production of weapons.

" Particular attention was paid to problems relating to the development of guided missiles, and arrangements were considered with the object of securing more active co-operation in this field. This should enable both countries to make the most productive use of their available scientific and technical resources and should help to speed up the development and introduction of guided missiles for use in the common defence.

" Prior to these talks, Mr. Duncan Sandys made an extensive tour of experimental establishments concerned with the development of guided missiles in different parts of the United States."

Germ Warfare Defence Tests

Mr. Duncan Sandys, the Minister of Supply, announced on 11th March that trials of defence methods against biological warfare had been carried out off the Scottish coast in recent years, and were to be continued during 1954 in Bahaman waters.

Defences of Portland Tested

An exercise planned to test the defences of Portland against attack by minelaying aircraft, canoeists, and frogmen operating from submarines was held on 29th and 30th May.

Among the ships engaged were the aircraft carriers *Implacable* and *Indefatigable*, the submarine depot ship *Maidstone*, submarines of the Second Submarine Squadron, the "Daring" class vessel *Diana*, and the frigate *Virago*, in addition to destroyers and frigates of the Second Training Squadron, patrol craft of the First Seaward Defence Squadron, and motor minesweepers from the Sussex and Severn Divisions of the Royal Naval Volunteer Reserve.

421 Dorset Coast Regiment, a Territorial Army unit manning harbour, gun, and searchlight defences, a Royal Marine Small Boat Unit, the Portland unit of the R.N. Minewatching Service, and 1834 Air Squadron, R.N.V.R., from the Naval Air Station at Yeovilton were also involved.

For the purposes of the exercise, it was assumed that an attack on south coast ports was to take place within a period of 24 hours. It was also assumed that mobilization had not begun, necessitating the manning of the defences from local sources.

The Red attacking force comprised two submarines, 1834 Air Squadron, and the Royal Marine Small Boat Unit.

School of Infantry Demonstration

A demonstration arranged by the School of Infantry to illustrate co-operation between infantry and armour with supporting aircraft took place on 12th July. Preceded by a bomber which marked the target, aircraft attacked with rockets and multiple machine guns. Centurion tanks of a squadron of the 10th Royal Hussars and a company of The Wiltshire Regiment in armoured personnel carriers, supported by field artillery and 4.2-inch mortars, then assaulted the target. The accuracy throughout the demonstration was reported to be impressive.

Royal Tournament

H.M. The Queen, accompanied by the Duke of Edinburgh, was present at a performance of the Royal Tournament at Earls Court on 9th June. This Tournament, in which all three Services were represented, opened on 2nd and ended on 19th June.

Soldiers', Sailors', and Airmen's Families Association

The third Searchlight Tattoo in aid of the Soldiers', Sailors', and Airmen's Families Association took place each evening at the White City Stadium from 28th June to 3rd July. This Tattoo is staged jointly by the three Services and about 2,000 members took part on this occasion.

DOMINIONS AND COLONIES

AUSTRALIA

Growth of the Armed Forces.—It is reported that Australia now has a defensive fighting force of nearly 150,000 men, compared with a total force of 58,000 men on 30th June, 1950. This substantial increase of fighting strength has been brought about in accordance with a three-year programme promulgated by the Australian Government in 1950, when the Prime Minister, Mr. R. G. Menzies, called upon the nation for a special effort to equip itself for defence in view of the danger of war at that time.

In September, 1953, after the completion of the three-year programme, the Prime Minister asked the National Security Resources Board to examine the position of national resources, and after an exhaustive investigation the Board has presented its report which is published in a booklet entitled *Defence and Development*. It is stated in the report that the programme has had a good measure of success, and that Australia is now in a better position to meet a sudden war.

The Board states that under the National Service training scheme now in operation, 33,750 men are called up for training each year; that the Navy has 23 ships in commission, as against 16 at the commencement of the three-year period under review (though the true increase in naval strength was greater than these figures showed); and that the Air Force had almost trebled in strength during the three years.

DEFENCE POLICY.—The Australian Defence Minister, Sir Philip McBride, announced on 11th April a major readjustment in Australia's defence policy under which greater emphasis would henceforth be placed on the role of the R.A.A.F., whilst the strength of the permanent Army and of the Fleet Air Arm would be reduced. The Navy would give priority to surface and anti-submarine vessels, and, although responsibility for air protection at sea within range of land-based aircraft would be assigned to the Air Force, there would be close co-operation between the two Services.

One of the basic principles of Australia's defence policy, the Minister added, was that democracies must maintain progress in research and development of atomic and hydrogen bombs, as well as guided weapons and pilotless aircraft, in the hope that the fearful effects of these weapons would deter any aggressor from their use and hasten the day for the international control and limitation of armaments.

GUIDED MISSILES—CO-OPERATION WITH THE UNITED STATES.—Australian and American co-operation in the exchange of information on the development of guided missiles has been established.

The Minister for Supply, Mr. Beale, announced on 6th May that six senior scientists from the Woomera long range weapons establishment and the United Kingdom Ministry of Supply would leave for the United States on 8th May for talks with American guided missile experts. The visit was being made as part of the Australian Government's policy of maintaining the closest possible co-operation on problems of mutual defence with both the United Kingdom and the United States. The purpose of the visit would be to maintain co-operation between Australia and America in the fields of installation, instrumentation, and operating techniques of guided missile ranges. It would follow the visit to Australia in April last year of an American party comprising civilian scientists and representatives of all armed Services which had made an examination of the Woomera project.

ALIENS FOR NATIONAL SERVICE.—Young aliens permanently resident in Australia were included, for the first time, in the registration for National Service on 18th May.

PAKISTAN

FRIENDLY CO-OPERATION AGREEMENT WITH TURKEY.—An Agreement on friendly co-operation between Pakistan and Turkey was signed in Karachi on 2nd April by Sir Zafrulla Khan, the Pakistani Foreign Minister, and M. Selahattin Reffet Arbel, the Turkish Ambassador.

The Agreement came into force on 12th June, when instruments of ratification were exchanged in Ankara following the ratification of the Agreement by the Pakistani and Turkish Parliaments. The exchange of ratifications coincided with a visit by Mr. Mohammed Ali, the Pakistani Prime Minister, to Ankara.

MUTUAL DEFENCE ASSISTANCE AGREEMENT WITH THE UNITED STATES.—A mutual Defence Assistance Agreement between Pakistan and the United States was signed in Karachi on 19th May by the Pakistani Defence Minister, Sir Zafrulla Khan, and Mr. John K. Emmerson, the United States Chargé d'Affaires, and came into force immediately.

Both Governments simultaneously exchanged Notes setting forth their mutual understanding that the Agreement involved no obligation on the part of Pakistan to provide military bases on Pakistani territory for the United States, and that it did not establish a military alliance between the two countries.

MALTA

H.M. The Queen

The Queen reviewed a combined Services parade in Malta on 4th May.

GIBRALTAR

H.M. The Queen

The Queen reviewed a combined Services parade in Gibraltar on 10th May.

TONGA

Local Defence Force

It was announced on 10th June that a local defence force—the first of its kind—would be raised in Tonga, and that New Zealand would supply The Tongan Government with basic equipment.

FOREIGN

BALKANS

On 5th July, the text of a Balkan military alliance treaty was initialled at the Foreign Ministry in Athens by the Greek Director-General of Foreign Affairs and the Turkish and Yugoslav Foreign Under-Secretaries. A joint statement issued on 5th July said that the draft had been initialled by the heads of the committees and would be submitted to the three Governments, together with a joint report. The three countries have decided that the terms shall not be made public before the final signature.

BELGIUM

National Service Period Reduced

On 4th May, the Prime Minister, M. Van Acker, announced, in a statement of policy to the new Chamber of Deputies, that the period of National Service would be reduced from 21 to 18 months. This decision was approved by the new Cabinet on 14th May. M. Van Acker emphasized that there would be no change in Belgium's foreign policy. He also stated that although military expenditure would continue to have priority, it must be kept within the country's financial means.

FRANCE

Recent Appointments

On 3rd June, the French Cabinet announced that General Paul Ely had been appointed C.-in-C. of the French Union Forces in Indo-China in succession to General Henri Navarre, and that he would also succeed M. Maurice Dejean as Commissioner-General in Indo-China.

On 4th June, it was announced that the Cabinet had appointed General Augustin Guillaume as Chief of Staff of the Armed Forces in succession to General Ely.

IRAQ

U.S. Military Aid

It was officially announced in Bagdad on 25th April that the U.S. Government had agreed to supply military aid to Iraq without any political obligations or commitments, as a result of a request made by the Iraqi Government in March, 1953, with a view to strengthening its forces.

JAPAN

RATIFICATION OF U.S.-JAPANESE DEFENCE AGREEMENT.—On 31st March, the Lower House of the Japanese Diet approved the Mutual Defence Assistance Agreement with the United States which was signed on 8th March, and the Agreement was ratified by The Upper House on 28th April.

ADOPTION OF LEGISLATION FOR THE CREATION OF DEFENCE FORCES.—Two Bills for the creation of Japanese defence forces, to be built up over the next eight years and having an aggregate strength of 164,000 men, were passed by the House of Representatives on 15th May and by the House of Councillors on 7th June. They provided, *inter alia*, that an initial defence force of 150,000 men, including naval and air units, would be established (involving an increase by about 30,000 in the National Safety Force's existing strength of 120,000); that the three Services would have their own General Staffs; that a National Defence Council would be formed to advise the Prime Minister and the Cabinet on defence matters; and that the National Safety Board would be known in future as the Defence Board.

It was stipulated that the commanders of the armed forces would themselves be subject to the command and supervision of the Prime Minister; that the Prime Minister would be required to obtain the consent of the Diet in advance, or retroactively in emergency, before calling out troops in the event either of external aggression or internal disorder; and that both full and partial mobilization would require the Diet's approval.

In passing these Bills, the House of Councillors added a rider barring the dispatch of Japanese troops overseas.

RESTORATION OF CENTRALIZED POLICE SYSTEM.—Another Bill was passed by both Houses on the same dates restoring the pre-war centralized police system and abolishing the post-war policy whereby local authorities had control of their own police forces.

KOREA

GENEVA STATEMENT

The non-Communist delegations announced on 15th June that, so long as the Communist delegations rejected the fundamental principles which they considered indispensable for a solution of the Korea question, further consideration of this question by the conference would serve no purpose.

THAILAND

INCREASE OF MILITARY AID BY THE UNITED STATES

As a result of recent talks between a Thai military mission and the United States Chiefs of Staff, it was reported on 14th July that the United States has agreed to increase military assistance to Thailand immediately. Modern equipment will be sent and officers and non-commissioned officers will be trained.

The leader of the mission, General Risdi Dhanarajajata, said that Thailand wished to double its navy, army, and air force as soon as possible; that there were 100,000 Regulars in the army, and a further 100,000 trained reservists could be called up; and that Thailand hoped to have a jet fighter squadron in service soon.

UNITED STATES

ADDITIONAL PURCHASES FOR STRATEGIC STOCKPILE

In a directive to the Office of Defence Mobilization on 26th March, President Eisenhower called for additional purchases of a number of metals and minerals for the U.S. strategic stockpile. He directed that these should be purchased, wherever possible, from U.S. producers, and that buying should be spread over a considerable period.

NAVY NOTES

GREAT BRITAIN

H.M. The Queen

Royal Tour.—The Queen and the Duke of Edinburgh returned to London on 15th May from their Commonwealth tour. The Royal Yacht *Britannia*, on her maiden voyage, had arrived with the Duke of Cornwall and Princess Anne on 1st May at Tobruk, where The Queen and the Duke of Edinburgh embarked. During the voyage from Tobruk to home waters, Her Majesty had a close ocean escort of at least four of H.M. Ships, supplemented at various times by ships of the Commands through which she passed and by aircraft of the Fleet Air Arm and R.A.F. Coastal Command. Visits were paid to Malta and Gibraltar *en route*. Having made good time on the run from Gibraltar, the Royal Yacht anchored in St. Austell Bay, Cornwall, on the night of 13th/14th May. Next morning there began a triumphal progress up the Channel, the first to salute Her Majesty being the Home Fleet under Admiral Sir Michael Denny in the *Vanguard* off Plymouth. In reply to a message of welcome, The Queen signalled: "It is a wonderful moment for my husband and I after nearly six months away to be met and escorted by ships of the Home Fleet." The aircraft carrier *Triumph*, wearing the flag of Admiral Sir Alexander Madden, Commander-in-Chief, Plymouth, and with 300 naval cadets embarked, was among the vessels which steamed past and fired a Royal salute. Just before entering the Needles Channel the *Britannia* was joined by the frigate *Grenville*, wearing the flag of Admiral Sir John Edelsten, Commander-in-Chief, Portsmouth, and with the First Lord of the Admiralty, Mr. J. P. L. Thomas, and the First Sea Lord, Admiral of the Fleet Sir Rhoderick McGrigor, embarked. In the Solent, by command of Her Majesty, the Prime Minister embarked in the *Britannia* from the barge of the C.-in-C., Portsmouth, which had brought him from Southampton. On reaching the Thames Estuary on the morning of the 15th the escort was taken up by four fast patrol boats until the Pool of London was reached. The *Britannia* berthed at Battle Bridge Tier in the Pool at 1.35 p.m., and Her Majesty continued her journey to Westminster Pier in the Royal barge of the yacht. The Queen sent messages of thanks to the Commanders-in-Chief responsible for the arrangements for her home-coming and ordered all ships and establishments in the home Commands and in home waters to splice the mainbrace.

R.N.V.R. Review.—To mark the golden jubilee of the Royal Naval Volunteer Reserve, The Queen inspected some 2,000 officers and ratings of the force, its associated reserves, and Commonwealth Naval Volunteer Reserves on Horse Guards Parade on 12th June. The review took place in heavy rain, which caused the postponement of a fly-past by squadrons of the R.N.V.R. air divisions. This was held on the following Saturday when nearly 100 aircraft flew past Her Majesty at Windsor Castle.

Aides-de-Camp.—Captain (E) K. J. R. Langmaid, D.S.C., has been appointed a Naval Aide-de-Camp to The Queen from 7th June, 1954, in succession to Captain (E) H. J. B. Grylls, R.N. Colonel M. Archdall has been appointed a Royal Marine Aide-de-Camp to The Queen, vice Colonel B. W. Leicester, D.S.O., from 1st April, 1954. Captain E. J. R. Pollitt, R.D., has been appointed a Royal Naval Reserve Aide-de-Camp to The Queen, in succession to Captain C. E. Duggan, R.D., R.N.R., from 14th June, 1954.

Chatham Memorial and Colour.—On 8th July, H.R.H. The Duke of Gloucester flew by helicopter to Chatham to unveil two memorial windows in the church of St. George in the Royal Naval Barracks, and to present a new Queen's Colour to the Nore Command. The windows form the Chatham Port Division Memorial to his late Majesty King George VI, and have been subscribed for by Chatham-manned ships and establishments, senior naval officers with Chatham connections, and also local associations. The new Queen's Colour was consecrated by the Chaplain of the Fleet.

Swedish Royal Visit

For their State visit to London from Monday, 28th June, to Thursday, 1st July,

the King and Queen of Sweden travelled in the Swedish cruiser *Tre Kronor*, Captain N. H. Bong, Royal Swedish Navy, wearing the flag of Admiral Klint. The vessel was escorted into the Thames by the British frigate *Grenville* and the destroyer *Obdurate*. At the entrance to the Thames the escort was joined by boats of the Second Fast Patrol Boat Squadron, and the *Grenville* and *Obdurate* parted company. The *Tre Kronor* proceeded to Greenwich Tier, and from there the King and Queen, accompanied by the Duke of Edinburgh, continued their journey to Westminster Pier in a Royal barge, where they were met by The Queen and other members of the Royal Family.

Board of Admiralty

First Lord.—The First Lord, Mr. J. P. L. Thomas, M.P., visited the Home Fleet at Scapa on 16th and 17th June, accompanied by the Deputy Secretary, Mr. C. G. Jarrett, and the Naval Secretary, Rear-Admiral R. G. Onslow. On 18th June, the First Lord visited Newcastle-on-Tyne to open the new dry dock at North Shields built by the Smith's Dock Company, Ltd. On this occasion he was accompanied by the Controller, Vice-Admiral Sir Ralph Edwards, and the Permanent Secretary, Sir John Lang.

First Sea Lord.—The First Sea Lord, Admiral of the Fleet Sir Rhoderick McGrigor, on 17th May watched part of "Runaground V", the annual amphibious and cliff assault demonstration for the benefit of students of the Staff Colleges, at Eastney, and later flew by naval helicopter from Ford to Culver Cliff, for the second phase of the exercise. On 24th and 25th May, the First Sea Lord visited the Inshore Flotilla, which had recently recommissioned with new inshore and coastal minesweepers, at Harwich, and went to sea to watch a local exercise.

The Parliamentary Secretary, Commander A. H. P. Noble, with the Third and Fourth Sea Lords and other naval officers, visited the United States destroyer *Meredith* at Portsmouth on 7th May to see features of the ship designed to improve the crew's conditions. On 14th May, Commander Noble visited H.M.S. *Dauntless*, W.R.N.S. training establishment at Burghfield, near Reading; and on 21st May, H.M.S. *Diligence*, small craft commissioning base at Hythe, near Southampton, and the Coastal Forces base, H.M.S. *Hornet*, Gosport. On 9th July, the Parliamentary Secretary visited ships and naval establishments in the Clyde area, and next day the naval construction research establishment at Rosyth.

Sir John Lang, Permanent Secretary, at the invitation of the Norwegian Government, visited Norway from 23rd to 27th June and had discussions with Norwegian officials concerned in the administration and financial control of the Royal Norwegian Navy.

Honours and Awards

The following awards were included in the Queen's Birthday Honours List published on 10th June:—

G.C.B.—Admiral Sir Michael M. Denny, K.C.B., C.B.E., D.S.O.

K.C.B.—Vice-Admiral Cecil C. Hughes-Hallett, C.B., C.B.E.; General John C. Westall, C.B., C.B.E., R.M.

C.B.—Rear-Admiral L. N. Brownfield, C.B.E.; Rear-Admiral W. T. Couchman, C.V.O., D.S.O., O.B.E.; Rear-Admiral R. F. Elkins, C.V.O., O.B.E.; Rear-Admiral G. B. H. Fawkes, C.V.O., C.B.E.; Major-General C. R. Hardy, C.B.E., D.S.O., R.M.; Rear-Admiral (E) C. Littlewood, O.B.E.; Rear-Admiral (S) F. R. J. Mack, C.B.E.; Rear-Admiral R. G. Onslow, D.S.O.

K.B.E.—Vice-Admiral Sydney M. Raw, C.B., C.B.E.; Rear-Admiral (E) Alexander D. McGlashan, C.B., D.S.O.

Royal Tour.—Vice-Admiral E. M. C. Abel Smith, C.B., C.V.O., Flag Officer, Royal Yachts, was invested with the K.C.V.O. by The Queen before Her Majesty disembarked from H.M. Yacht *Britannia* on her return from her Commonwealth tour.

Flag Appointments

A.C.N.S.—Rear-Admiral M. G. Goodenough, C.B.E., D.S.O., to be Assistant Chief of Naval Staff, in succession to Rear-Admiral R. F. Elkins, C.B., C.V.O., O.B.E. (August, 1954).

Naval Training.—Rear-Admiral B. Bryant, D.S.O., D.S.C., to be Deputy Chief of Naval Personnel (Training) and Director of Naval Training, in succession to Rear-Admiral M. Richmond, C.B., D.S.O., O.B.E. (July, 1954).

Naval Secretary.—Captain J. D. Luce, D.S.O., O.B.E., to be Naval Secretary to the First Lord of the Admiralty, in succession to Rear-Admiral R. G. Onslow, C.B., D.S.O. (August, 1954).

Devonport Dockyard.—Rear-Admiral (E) H. J. B. Grylls to be Engineer Manager, Devonport Dockyard, in succession to Engineer Rear-Admiral C. R. P. Bennett, C.B.E., who is retiring (7th June, 1954).

Dental Services.—The following was announced on 21st May: Surgeon Captain (D) L. B. Osborne to be Deputy Director-General for Dental Services, vice Surgeon Rear-Admiral (D) F. R. P. Williams, C.B.E., and promoted Surgeon Rear-Admiral (D).

Greenwich Hospital.—The First Lord has approved the appointment of Mr. Robert Millar as Director of Greenwich Hospital, in succession to Mr. C. B. Coxwell, C.B., O.B.E., who retires on 30th September, 1954.

Retirements and Promotions

Rear-Admiral N. V. Dickinson, C.B., D.S.O., D.S.C., and Rear-Admiral A. F Pugsley, C.B., D.S.O., placed on Retired List (2nd June, 1954).

Rear-Admiral Sir Anthony W. Buzzard, Bt., C.B., D.S.O., O.B.E., placed on Retired List (30th June, 1954).

Rear-Admiral (S) M. H. Elliott, C.B., C.B.E., to be promoted Vice-Admiral (S), with seniority 4th August, 1954.

Captain (E) H. J. B. Grylls to be promoted Rear-Admiral (E), 7th June, 1954.

Engineer Rear-Admiral C. R. P. Bennett, C.B.E., retires, 7th June, 1954.

Half-Yearly Lists

The Admiralty announced the following promotions and retirements to date 7th July, 1954:—

To be promoted to Rear-Admiral in H.M. Fleet.—Captain B. Bryant, D.S.O., D.S.C., A.D.C.; Captain J. G. T. Inglis, O.B.E., A.D.C.; Captain W. J. Yendell, A.D.C.; Captain M. G. Goodenough, C.B.E., D.S.O.; Captain R. A. Currie, D.S.C.; Captain R. L. Fisher, D.S.O., O.B.E., D.S.C.

To be placed on the Retired List in the rank of Captain:—Captain V. D'A. Donaldson, A.D.C.; Captain C. B. Alers-Hankey, D.S.C., A.D.C.; Captain K. S. Colquhoun, C.B.E., D.S.O.; Captain J. T. Lean, D.S.O.; Captain P. C. S. T. Carey; Captain R. G. Swallow.

The following promotions were announced to date from 30th June, 1954:—

Commander to Captain.—P. A. Roche, D.S.C.; A. G. L. Seale, D.S.C.; J. L. Blackham; J. A. C. Henley, D.S.C.; J. T. Kimpton, D.S.C.; P. J. Wyatt, D.S.C.; B. D. Gallie, D.S.C.; T. D. Herrick, D.S.C.; J. S. Dalglish; P. U. Bayly, D.S.C.; F. B. P. Brayne-Nicholls, D.S.C. (acting Captain); W. J. Parker, O.B.E., D.S.C.; H. R. B. Janvrin, D.S.C. (acting Captain); A. P. W. Northey, D.S.C.; S. Grattan-Cooper, O.B.E.; B. Pengelly, D.S.C.; T. E. Barlow, D.S.C.; D. C. E. F. Gibson, D.S.C.

Commander (E) to Captain (E).—A. E. Turner; R. K. Hodgkin; H. White, D.S.C.; E. C. Beard; P. Charig; C. P.G. Walker, D.S.C.

Commander (L) to Captain (L).—F. Dossor; J. D. M. Robinson.

Surgeon Commander to Surgeon Captain.—W. J. M. Sadler; C. N. H. Joynt.

Commander (S) to Captain (S).—R. A. J. Owen (acting Captain (S)); E. N. Hickson; W. W. Sheppard, O.B.E.

Lieut.-Colonel to Colonel, R.M.—B. J. D. Lumsden, O.B.E.; G. B. Grant, O.B.E.

Exercises and Cruises

Home Fleet.—Ships of the Home Fleet, including the battleship *Vanguard*, flagship of Admiral Sir Michael Denny, assembled for their Summer cruise early in May. In view of their part in escorting The Queen in the *Britannia* up the English Channel, the assembly this year was in Tor Bay instead of at Portland. After the fleet and squadron regattas at Scapa Flow, the Fleet left in the third week of June for a series of official visits to Continental and Scandinavian ports, of which 25, in eight countries between Finland and Northern France, were included in the programme. King Frederick of Denmark, in his capacity as Honorary Admiral in the Royal Navy, visited the cruiser *Jamaica* at Copenhagen on 5th July.

N.A.T.O. Minesweeping.—N.A.T.O. minesweeping forces exercised in the Channel Command in the sea area south of the Isle of Wight between 30th April and 8th May, under the direction of Admiral Sir John Edelsten, Allied C.-in-C., Channel. British, French, and Norwegian minesweepers took part. Practice mines were laid by ships and submarines of the Royal Navy and by aircraft of the United Kingdom Bomber Command.

Submarine Snort Cruise.—H.M. Submarine *Tally Ho* surfaced on 22nd June at the entrance to the English Channel after a three weeks' voyage from Bermuda at snorting depth, and proceeded to her base at Gosport. She is the first of her class to make such a trans-Atlantic voyage. The submarine *Andrew* made a similar submerged passage last year, but no 'T' class submarine had previously attempted it. The *Tally Ho* was commanded by Lieutenant-Commander B. L. D. Rowe, D.S.C.

Mediterranean.—A nine-day Allied exercise, designed to test the personnel of the Command of Allied Forces, Mediterranean, in their wartime function of control and protection of shipping, began at midnight on 2nd June, at the Malta headquarters of Admiral Lord Mountbatten. This was strictly a 'paper' exercise not including the actual participation of ships, and was known as "Medship A". Another exercise known as "Medminex A" took place in the waters of western Sicily. British and Italian surface and submarine forces and U.S.N. aircraft were under the command of a British minelayer commanding officer. Opposing forces consisting of British, Greek, Italian, and U.S. minesweepers were under the control of the Sicilian Sub-Area Command. Another Allied exercise, "Medflex B", took place in the eastern and central Mediterranean between 19th and 23rd July. Naval forces of six N.A.T.O. countries, with maritime air elements of the Royal Air Force, U.S. Navy, and Italian Air Force, were allocated between Orange and Blue Forces. Orange Forces were controlled by the Commanders of the central and eastern areas, Admiral Girosi from Naples and Admiral Lappas from Athens respectively, carrying out their normal area command functions within their respective zones. Blue Forces were deployed in opposition by the Commander, North Eastern Mediterranean, Admiral Altincan.

America and West Indies.—The frigate *Ben Lomond* returned to Chatham on 22nd June from service as headquarters ship for germ warfare experiments in the West Indies. The main tests were conducted by a team of scientists operating in the Caribbean Sea, at a site away from Bahaman shipping routes and 20 miles from the nearest inhabited island. No use was made of germs.

Guatemala.—Following the United States Government's approach on the subject of the search of merchant ships for arms which might be intended for Guatemala, where a revolt against the Government was in progress, the Foreign Office issued a statement on 18th June that: "H.M. Government strongly disapprove of the sale of arms to

Guatemala, and for several years have been refusing licences for the export of any arms to that country. They will, of course, continue this refusal. In fact, very few British ships sail to Guatemalan ports, but the British Government will co-operate to the fullest extent possible under British and international law in seeking to prevent British ships from carrying arms to Guatemala. . . . The Commander-in-Chief, West Indies, is being instructed to take appropriate action where practicable if the carriage of arms by British ships should be suspected."

Personnel

New Entry Cadets.—In a written reply in the House of Commons to Brigadier Rayner on 3rd June, the First Lord, Mr. J. P. L. Thomas, gave some details of the manner in which the early training of officers is being reorganized in the light of the decision that all cadets will enter the Royal Navy at about 18 years of age, from May, 1955, onwards. They will be trained for about two years at Dartmouth, partly on shore and partly afloat in a small squadron of H.M. ships such as frigates and minesweepers. The length of their training before becoming fully effective junior officers will be shorter than that of present Special Entry cadets. Gunrooms as such will not be required, because midshipmen, R.N., will no longer serve with the Fleet. When the flow of young officers through the present system of training has ceased, the existing sequence of courses for R.N. acting sub-lieutenants at Greenwich and the specialist schools will stop. There will also be no further need for a seagoing training cruiser or carrier.

Engineering College.—Approval has been given for the building of a large accommodation block at the R.N. Engineering College, Manadon, known under the ship name of H.M.S. *Thunderer*. When this block is completed, it will make possible the centralization of training of officers of the Engineering Branch of the Royal Navy at Manadon, and the buildings at Keyham, erected to house the College in 1880, will cease to be used as part of the College accommodation.

Gilbert Blane Medal.—The Gilbert Blane Medal, founded in 1830 and given to the Royal Naval surgeon who has contributed most markedly to medical science during the year, has been awarded to Surgeon Commander J. L. S. Coulter, D.S.C., R.N., barrister-at-law, for his work in editing the naval volumes of the Official Medical History of the Second World War, Volume I of which has recently been published.

Materiel

Launches.—The inshore minesweeper *Frettenham* was launched at the Cowes shipyard of J. Samuel White and Co., Ltd., on 17th May. The coastal minesweeper *Highburton* was launched at the Southampton yard of J. I. Thornycroft and Co., Ltd., on 2nd June. The first of a new type of anti-aircraft frigate, the *Puma*, was launched on 30th June at the Greenock yard of the Scotts' Shipbuilding and Engineering Company, Ltd. The *Puma* is of 340 feet extreme length (330 feet between perpendiculars), with a beam of 40 feet. She will be armed with four 4.5-in. guns and will have two smaller guns and a 'squid' anti-submarine mortar. The first of the Admiralty's new class of fast replenishment tankers, the *Tidereach*, was launched on 2nd June at the Tyneside yard of Swan Hunter and Wigham Richardson, Ltd. Altogether, about a dozen naval vessels were launched in June, the largest monthly total since the end of the 1939–45 War.

The first two ships of a new type of first-rate anti-submarine frigate were launched in July, H.M.S. *Torquay* on the 1st at the Belfast yard of Harland and Wolff, Ltd., and H.M.S. *Whitby* on the 2nd at the Birkenhead yard of Cammell Laird and Co., Ltd. These ships are of 370 feet extreme length and 360 feet between perpendiculars, with a beam of 41 feet. They are designed primarily for the location and detection of the most modern type of submarines.

Two more minesweepers were launched on 1st July, the coastal minesweeper *Swanton* by Messrs. J. S. Doig of Grimsby, and the inshore minesweeper *Mileham* by Messrs.

M. W. Blackmore of Bideford. Another fast replenishment tanker, the *Tiderange*, was also launched on 1st July at the Sunderland yard of Sir James Laing and Sons, Ltd.

"ARK ROYAL" TRIALS.—The aircraft carrier *Ark Royal*, now being completed by Cammell Laird and Co., Birkenhead, began her contractor's sea trials in June. She is of 36,800 tons displacement, and is the largest ship built by Messrs. Cammell Laird.

FLEET AIR ARM

EXERCISE "MILLSTRIKE".—Milford Haven and Pembroke Dock represented an enemy submarine base and commercial port in Operation "Millstrike", an exercise for the Fleet Air Arm which was planned for 8th and 9th July, but was postponed for 24 hours on account of the weather. A hundred naval jet aircraft, operating from the R.N. air stations at Ford (Sussex) and Yeovilton (Somerset), simulated the mining, bombing, and rocket attacks of a carrier-borne force. Milford and Pembroke were defended by other naval aircraft flown from the nearby airfield at Brawdy.

HELICOPTERS.—In reply to a question in Parliament on 30th June, the First Lord said that there were approximately 100 helicopters in service in the Royal Navy, some of which were American types supplied under the Mutual Defence Assistance programme. The types in service were the Dragonfly, Hiller, and Whirlwind. Approximately another 100 helicopters, all of them British, were on order for the Royal Navy.

FIRST SEA VENOM SQUADRON.—No. 890 Squadron, the first in the Royal Navy to be equipped with De Havilland Sea Venom all-weather jet fighters, at Yeovilton, in March last, made its first public appearance when its aircraft took part in the fly-past on the home-coming of The Queen from her Commonwealth tour.

FIRST GANNET FLIGHT.—The first unit of Fairey Gannet anti-submarine aircraft was formally inaugurated at Ford on 5th April, when Sir Richard Fairey handed over the log books of the aircraft to Lieutenant-Commander F. E. Cowtan, R.N., commanding officer of the flight, known as 703X Flight. The Gannet is the first naval aircraft to be designed solely for anti-submarine work.

ROYAL NAVAL VOLUNTEER RESERVE

JUBILEE REVIEW.—In a message to Vice-Admiral A. K. Scott-Moncrieff, Admiral Commanding Reserves, the Board of Admiralty noted with great satisfaction and pride the splendid bearing of all on parade at the Review by Her Majesty. Their Lordships sent their congratulations to the vice-admiral and to all officers, men, and women who took part.

R.R.S. "DISCOVERY" AS DRILLSHIP.—On the eve of the Review, it was announced by the Admiralty that the Royal Research Ship *Discovery* is to be taken over from the Boy Scouts' Association as an additional drillship for the London Division, R.N.V.R. The announcement added: "The ship was offered unconditionally as a gift, but the Admiralty proposes to allow the Sea Scouts to keep their boats at the *Discovery* and to provide them, and other similar youth organizations, with facilities on board during the forenoons on week-days and throughout the week-ends. The Admiralty further intends to allow the public access to the ship under arrangements to be announced. Arrangements are now being made to refit and adapt her for naval service."

NEW MINESWEEPERS.—Coastal minesweepers of the new construction programme are to be allocated as seagoing tenders to the R.N.V.R. on the basis of one to each of the 12 general service divisions. The first to be made available, H.M.S. *Alfriston*, building at the Southampton yard of Messrs. Thornycroft, was allotted to the Solent Division and is to bear the name *Warsash* while so employed. The new minesweeper *Alverton* was officially handed over to the London Division at Portsmouth Dockyard on 8th June, and renamed *Thames*. She sailed to work up in the Channel after the Jubilee Review on 12th June, and during this period visited a Continental port.

ROYAL MARINES

COMMANDANT GENERAL PROMOTED.—Lieutenant-General J. C. Westall, C.B., C.B.E., Commandant General Royal Marines, was promoted to General to date 20th May, 1954. The Commandant General visited Royal Marines in Germany between 5th and 9th July. On his return he called on Major-General P. J. Van Gijn, Commandant of the Royal Netherlands Marines, in Rotterdam.

GIBRALTAR ANNIVERSARY.—To commemorate the 250th anniversary of the capture and subsequent defence of Gibraltar, the Regimental Colour was trooped at the Royal Marines Barracks, Eastney, on 7th May, when the salute was taken by the Commandant General. Apart from the emblem of the globe, significant of actions fought throughout the world, ' Gibraltar ' remains the only battle honour emblazoned on the Colours of the Corps. The Colour trooped was presented to the Portsmouth Division, Royal Marines, by the late Prince George, Duke of Kent, in 1931.

WALCHEREN COMMEMORATION.—An official R.N. and R.M. party visited Walcheren for ceremonies on 25th and 26th June commemorating the Allied assault on the island in November, 1944. Among the party were Rear-Admiral A. F. Pugsley and Major-General C. F. Phillips, who commanded the Naval Force and 47 Royal Marines Commando respectively in the assault. On 25th June, the party attended a military parade in Middelburg in connection with the visit of the Queen of the Netherlands to celebrate the rehabilitation of Walcheren after the 1953 floods. On 26th June, a service of remembrance was held at Westkapelle at which a memorial stone was unveiled by Major-General Phillips in commemoration of the landings there. Later, he presented a carved oak Royal Marines Insignia to the people of Walcheren at the County Hall, Middelburg.

DOMINIONS AND COLONIES

AUSTRALIA

PROMOTIONS.—The Australian Commonwealth Naval Board announce the following :—

Captain (Acting Rear-Admiral) D. H. Harries, C.B.E., promoted to Rear-Admiral in H.M. Australian Fleet, to date 7th July, 1954.

Commander W. B. M. Marks, D.S.C., promoted to Captain, to date 30th June, 1954.

"VENDETTA" LAUNCHED.—H.M.A.S. *Vendetta*, a 3,700-ton destroyer of the "Daring" class, was launched on 3rd May at Williamstown Dockyard, in which she is the largest vessel yet built. The *Vendetta* is the second of three ships of the " Daring " class which are being built in Australia, the first, H.M.A.S. *Voyager*, having been launched in 1952.

FOURTH NAVAL MEMBER.—Captain D. McI. Russell, R.N., has been lent to the Royal Australian Navy as Fourth Naval Member, Australian Commonwealth Naval Board, to serve in the rank of Commodore Second Class while in the appointment.

CANADA

PROMOTIONS.—The following have been announced by the Department of National Defence, Ottawa, to date from 30th June, 1954 :—

Commander to Captain.—F. B. Caldwell, C.D. ; J. A. Charles, C.D.

Commander (E) to Captain (E).—J. S. Horam.

Instructor Commander to Instructor Captain.—K. L. Miller.

CRUISER VISIT.—The Canadian cruiser *Quebec*, Captain E. W. Finch Noyes, C.D., R.C.N., arrived at Lisbon on 13th May for a three-day visit.

NEW NAVAL COLLEGE.—According to *The Times*, a new naval college to provide officers for the Royal Canadian Navy is to be opened next September at the Esquimalt naval base, near Victoria on Vancouver Island. It will be known as H.M.C.S. *Venture*, and will accept up to 150 cadets between the ages of 16 and 19 each year for two-year courses. It will supplement the output from the inter-Service colleges, which is insufficient for future needs.

NEW ZEALAND

PACIFIC CRUISES.—An indication of the interest taken by the Royal New Zealand Navy in the South Pacific may be obtained from the ships' programmes for the first eight months of this year. In this period the area will have been visited by every type of ship in commission with the Navy. The frigate *Hawea* began with calls on islands in the Gilbert and Ellice Groups in February and March. Then, on 17th May, the survey ship *Lachlan* left Auckland to work in western Samoa until July. The following day the cruiser *Black Prince* left Sydney for Suva to begin an islands cruise with the Governor-General, Sir Willoughby Norrie, embarked.

DEVONPORT DOCKYARD.—The post of Superintendent of H.M.N.Z. Dockyard, Devonport, has been raised from a commander's appointment to that of a captain. Commander H. L. Jenkins, D.S.C., R.N., previously Commander Superintendent, has been promoted to Acting Captain and his title changed to Captain Superintendent. The dockyard is the main repair base for the Royal New Zealand Navy.

PAKISTAN

DESTROYER LOAN

The destroyer *Chivalrous* was transferred on loan to the Royal Pakistan Navy by the Commander-in-Chief, Plymouth, Admiral Sir Alexander Madden, at a ceremony in Trafalgar Dock, Liverpool, on 29th June. She was renamed H.M.P.S. *Taimur* by the Begum Choudri, wife of Rear-Admiral H. M. S. Choudri, Commander-in-Chief, Royal Pakistan Navy.

FOREIGN

RUSSIA

RETURN OF LEND-LEASE CRAFT

The first delivery of motor torpedo boats and submarine chasers returned by Russia to the United States under the lend-lease agreement was made on 17th May. As Article 14 of the Montreux Convention prohibits the passage through the Dardanelles of more than nine warships at a time, the delivery of the 38 craft was made in batches, the transfer to the United States taking place off the Asia coast, near the Princes Islands.

UNITED STATES

ATLANTIC COMMAND.—Admiral Jerauld Wright on 12th April assumed command of the U.S. Atlantic Fleet when he became Supreme Allied Commander, Atlantic, in succession to Admiral McCormick.

SHIPS LENT TO JAPAN.—An agreement was signed in Tokyo on 14th May by Mr. Allison, American Ambassador, and Mr. Okazaki, Foreign Minister, for the loan of U.S. warships to Japan. Of the many ships asked for, the United States has already agreed to lend this year two 1,600-ton destroyers and two 1,400-ton destroyer escorts.

AIRSHIP FLYING RECORD.—An American Navy Nan type airship, under Commander Marion H. Eppes, on 24th May broke the world endurance record of 170.3 hours set up in 1947 by another American dirigible. Taking off from Lakehurst, New Jersey, on 17th May, on a submarine patrol along the Atlantic seaboard, the Caribbean, and Mexican Gulf, by the afternoon of 24th May the airship had registered 177 hours in the air. She carried a naval crew of 14 and one civilian observer.

CARRIER EXPLOSION.—An explosion and fire in the aircraft carrier *Bennington* on 26th May caused the death of 100 men and injury to about 200 others. The fire was brought under control and the ship was docked at Quonset, Rhode Island. A message of sympathy was sent by the First Lord of the Admiralty to the Secretary of the United States Navy, and was warmly acknowledged.

ARMY NOTES

GREAT BRITAIN

H.M. The Queen

The Queen, accompanied by the Duke of Edinburgh (Colonel, Welsh Guards) and the Duke of Gloucester (Colonel, Scots Guards), was present at The Queen's Birthday Parade on the Horse Guards on 10th June.

The Queen presented Colours to the 1st, 2nd, and 4th (T.A.) Battalions, The Royal Welch Fusiliers, at Wroughton Airfield on 23rd July.

Queen Elizabeth the Queen Mother presented Colours to The Inns of Court Regiment, T.A., at the Inner Temple on 26th May.

Queen Elizabeth the Queen Mother, accompanied by the Princess Royal, visited the Women's Royal Army Corps Depot at Guildford and the Women's Royal Army Corps School of Instruction at Liphook on 9th June.

Queen Elizabeth the Queen Mother, Colonel-in-Chief, The Black Watch (Royal Highland Regiment), received the freedom of the City of Dundee on behalf of the Regiment at Dundee on 23rd June.

Queen Elizabeth the Queen Mother, Colonel-in-Chief of the Regiment, presented Colours to the 1st Battalion, The Manchester Regiment, at Harington Barracks, Formby, on 23rd July.

The Duke of Edinburgh, as Colonel-in-Chief, inspected a parade of the 1st Battalion, The Queen's Own Cameron Highlanders, and visited British troops at Lüneburg on 24th June.

The Duke of Edinburgh visited the Staff College, Camberley, on 30th June.

The Duke of Edinburgh visited units of the Territorial Army in training on Salisbury Plain on 13th July.

The Princess Margaret was present at the Passing Out Parade at the Eaton Hall Officer Cadet School, Chester, on 28th May.

The Princess Margaret, as Colonel-in-Chief, reviewed the 3rd The King's Own Hussars at Iserlohn on 12th July, and on 14th July Her Royal Highness attended a parade and demonstration by the 11th Armoured Division at Sennelager.

The Duke of Gloucester, Colonel, Scots Guards, was present at the Laying-up of the Sovereign's Standards of The Life Guards and the Royal Horse Guards (The Blues) in the Royal Military Chapel, Wellington Barracks, on 20th May.

The Duke of Gloucester, as Colonel-in-Chief, visited the 1st Battalion, The Rifle Brigade (Prince Consort's Own) at Bulford on 1st June.

The Princess Royal, Colonel-in-Chief, The Royal Scots, opened the 1939–45 War Memorial Cottages at Muirhouse on 6th May and visited the Depot, Glencorse, on 7th May.

The Princess Royal, as Colonel-in-Chief, Royal Corps of Signals, and Controller Commandant, Women's Royal Army Corps, visited Scottish Command (Mixed) Signal Regiment and 1st Independent Company, Women's Royal Army Corps, at Dreghorn on 8th May.

The Princess Royal, Controller Commandant, Women's Royal Army Corps, visited the Women's Royal Army Corps of Southern Command at Figsbury Barracks, Winterbourne Dauntsey, on 19th June.

The Queen has been graciously pleased to approve the following appointments :—

To be Aide-de-Camp to Her Majesty.—Brigadier L. G. Smith, O.B.E., M.I.Mech.E., R.E.M.E. (28th June, 1954), vice Brigadier E. R. Ash, C.B.E., M.I.Mech.E., retired.

To be Aides-de-Camp (Additional) to Her Majesty.—Major (Honorary Lieut.-Colonel) H. W. Poat, D.S.O., M.C. (2nd December, 1953), vice Major (Honorary Lieut.-Colonel) R. W. Randall, tenure expired; Colonel E. L. Luce, D.S.O., O.B.E., T.D. (8th March, 1954), vice Colonel Sir Paul Gueterbock, K.C.B., D.S.O., M.C., T.D., J.P., D.L., deceased.

To be Aide-de-Camp (Army Emergency Reserve) to Her Majesty.—Lieut.-Colonel H. T. Wheeler, R.A.S.C. (A.E.R.O.) (12th May, 1954).

To be Honorary Dental Surgeon to Her Majesty.—Colonel J. B. Cowie, O.B.E., M.M., F.D.S. (22nd March, 1954), vice Colonel N. F. Smith, retired.

To be Colonels Commandant.—Of the Royal Regiment of Artillery, Lieut.-General G. K. Bourne, C.B., C.M.G., C.B.E. (17th May, 1954), vice General Sir Alan G. Cunningham, G.C.M.G., K.C.B., D.S.O., M.C., LL.D., tenure expired; and Lieut.-General Sir John D. Woodall, K.B.E., C.B., M.C. (12th July, 1954), vice Major-General R. B. Pargiter, C.B., C.B.E., tenure expired; of 1st Battalion, The King's Royal Rifle Corps, Lieut.-General Sir Euan A. B. Miller, K.C.B., K.B.E., D.S.O., M.C. (30th June, 1954), vice Major-General H. O. Curtis, C.B., D.S.O., M.C., D.L., resigned.

To be Colonels of Regiments.—Of The Royal Fusiliers (City of London Regiment), Brigadier (temporary Major-General) F. D. Rome, C.B.E., D.S.O. (1st July, 1954), vice Lieut.-Colonel (Honorary Major-General) J. F. Harter, D.S.O., M.C., D.L., resigned; of The King's Own Scottish Borderers, Major-General J. Scott-Elliot, C.B., C.B.E., D.S.O. (19th June, 1954), vice Major-General E. G. Miles, C.B., D.S.O., M.C., tenure expired; of The East Surrey Regiment, Colonel (Honorary Brigadier) G. R. P. Roupell, V.C. (1st July, 1954), vice Lieut.-General Sir Arthur A. B. Dowler, K.C.B., K.B.E., resigned; of The Malay Regiment, Lieut.-General Sir Hugh Stockwell, K.B.E., C.B., D.S.O. (21st June, 1954).

Honours and Awards

The following appointments to the Royal Victorian Order were published in *The London Gazettes* of 27th April and 25th May respectively:—

G.C.V.O.—Field-Marshal Sir William J. Slim, G.C.B., G.C.M.G., G.B.E., D.S.O., M.C.

K.C.V.O.—General Sir Gordon H. A. MacMillan of MacMillan, K.C.B., C.B.E., D.S.O., M.C.

The following were included in H.M. The Queen's Birthday Honours List:—

G.C.B.—General Sir Cameron G. G. Nicholson, K.C.B., K.B.E., D.S.O., M.C.

K.C.B.—Lieut.-General Sir Euan A. B. Miller, K.B.E., C.B., D.S.O., M.C.; Lieut.-General Sir Hugh C. Stockwell, K.B.E., C.B., D.S.O.

C.B.—Brigadier W. S. Beddall, O.B.E.; Major-General V. Boucher, C.B.E.; Major-General C. J. G. Dalton, C.B.E.; Brigadier (temporary) J. C. D'A. Dalton, C.B.E.; Major-General (temporary) W. A. D. Drummond, C.B.E.; Major-General K. G. Exham, D.S.O.; Major-General G. D. Fanshawe, D.S.O., O.B.E.; Major-General W. A. Lord, C.B.E.; Major-General R. K. Millar, D.S.O.; Major-General R. Murphy, C.B.E., M.B., Q.H.S.; Major-General J. F. F. Oakeshott, C.B.E.; Brigadier F. B. Pigott, C.I.E.; Major-General H. H. C. Sugden, C.B.E., D.S.O.; Major-General G. S. Thompson, D.S.O., M.B.E.

C.M.G.—Major-General C. F. C. Coleman, C.B., D.S.O., O.B.E.

D.B.E.—Brigadier Helen S. Gillespie, M.B.E., R.R.C., Q.H.N.S.

K.B.E.—Lieut.-General G. K. Bourne, C.B., C.M.G., C.B.E.; Lieut.-General W. J. Eldridge, C.B., C.B.E., D.S.O., M.C.

Royal Red Cross, First Class.—Lieut.-Colonel Beatrice L. Ferrier, A.R.R.C., Q.A.R.A.N.C.; Lieut.-Colonel (temporary) Helen M. Grant, Q.A.R.A.N.C.; Major Mary E. Holmes, Q.A.R.A.N.C.

The following was included on 29th June in the list of awards in the Second Supplement to *The London Gazette* of 25th June, in recognition of distinguished services in Malaya during the period 1st July to 31st December, 1953:—

C.B.—Brigadier (temporary) K. R. Brazier-Creagh, C.B.E., D.S.O.

Appointments

Ministry of Supply.—Major-General G. N. Tuck, C.B., O.B.E., appointed Deputy Controller of Munitions (17th May, 1954).

War Office.—Brigadier W. G. H. Pike, C.B.E., D.S.O., appointed Director of Staff Duties, with the temporary rank of Major-General (1st July, 1954). Substituted for the notification in the May, 1954, Journal.

United Kingdom.—Lieut.-General Sir Francis W. Festing, K.B.E., C.B., D.S.O., appointed G.O.C.-in-C., Eastern Command (1st July, 1954).

Major-General E. K. G. Sixsmith, C.B., C.B.E., appointed G.O.C., 43rd Infantry Division, T.A., and South-West District (September, 1954).

Major-General J. H. O. Wilsey, C.B., C.B.E., D.S.O., appointed G.O.C., 2nd Infantry Division (October, 1954).

Major-General B. A. Coad, C.B., C.B.E., D.S.O., appointed President, Regular Commissions Board (November, 1954).

Germany.—The notification in the February, 1954, Journal regarding General Sir Gerald W. R. Templer, G.C.M.G., K.C.B., K.B.E., D.S.O., A.D.C., is cancelled.

Brigadier R. St. G. T. Ransome, C.B., C.B.E., M.C., appointed Services Relations Adviser, Control Commission, Germany, with the temporary rank of Major-General (29th June, 1954).

Middle East Land Forces.—Major-General R. A. Hull, C.B., D.S.O., appointed G.O.C., British Troops, Egypt, with the temporary rank of Lieut.-General (15th June, 1954).

Major-General E. R. Benson, C.B., C.M.G., C.B.E., appointed Chief of Staff, Middle East Land Forces (15th June, 1954).

Far East Land Forces.—Brigadier (local Major-General) D. D. C. Tulloch, D.S.O., M.C., A.D.C., appointed G.O.C., Singapore District, with the temporary rank of Major-General (1st May, 1954). Substituted for the notification in the May, 1954, Journal.

Major-General (local Lieut.-General) C. S. Sugden, C.B., C.B.E., appointed Commander, British Forces, Hong Kong, with the temporary rank of Lieut.-General (31st May, 1954).

Promotions

General.—Lieut.-General to be General:—Sir Charles F. Loewen, K.C.B., K.B.E., D.S.O. (16th April, 1954).

Lieut.-General.—Temporary Lieut.-General to be Lieut.-General:—E. O. Herbert, C.B., C.B.E., D.S.O. (16th April, 1954).

Major-Generals to be temporary Lieut.-Generals:—C. S. Sugden, C.B., C.B.E. (31st May, 1954); R. A. Hull, C.B., D.S.O. (15th June, 1954).

Major-Generals.—Temporary Major-Generals, Brigadiers, or Colonels to be Major-Generals:—C. J. G. Dalton, C.B.E. (11th January, 1954); H. MacG. Patterson, C.B.E. (22nd January, 1954); P. H. de Havilland, C.B.E. (2nd February, 1954); J. N. R. Moore, C.B.E., D.S.O. (5th April, 1954); G. E. R. Bastin, O.B.E. (16th April, 1954); J. R. Cochrane, C.B., C.B.E. (3rd May, 1954); V. Boucher, C.B.E. (31st May, 1954).

Brigadiers or Colonels to be temporary Major-Generals :—W. G. Fryer, C.B.E. (22nd March, 1954) ; D. D. C. Tulloch, D.S.O., M.C., A.D.C. (1st May, 1954) ; N. P. H. Tapp, C.B.E., D.S.O. (3rd May, 1954) ; C. E. R. Hirsch, C.B.E. (9th June, 1954) ; A. E. Morrison, O.B.E. (23rd June, 1954) ; R. St. G. T. Ransome, C.B., C.B.E., M.C. (29th June, 1954) ; E. C. Colville, D.S.O. (29th June, 1954) ; W. G. H. Pike, C.B.E., D.S.O. (1st July, 1954) ; G. A. Bond, C.B.E., A.M.I.Mech.E. (15th July, 1954).

Retirements

The following General Officers have retired :—Major-General K. F. MacK. Lewis, C.B., D.S.O., M.C. (3rd May, 1954) ; Major-General H. C. Phipps, C.B., D.S.O. (31st May, 1954) ; Major-General G. P. Walsh, C.B., C.B.E., D.S.O. (1st July, 1954).

Regular Army Recruiting

The Regular Army recruiting statistics for June show that the total number of enlistments from civil life during the month were 2,516 men and 144 boys compared with 2,514 and 122 in April and 2,476 and 286 in May. The figures for re-enlistments were 6 from Short Service (April, 10 ; May, 9) and 416 from National Service (April, 437 ; May, 393).

Territorial Army Training

43rd (Wessex) Infantry Division, T.A.—The Headquarters and the Divisional Signal Regiment of the 43rd (Wessex) Infantry Division, T.A., consisting of some 90 officers and 480 men, moved from Somerset to Germany on 3rd July to take part in I Corps signals Exercise " Javelin Eight ". Vehicles and signal equipment were supplied by B.A.O.R. This was the first time that a divisional headquarters of the Territorial Army had moved from England to Germany for training in peace-time.

49th (West Riding) Armoured Division, T.A.—During divisional training on Salisbury Plain in July, the 49th (West Riding) Armoured Division, T.A., carried out the first exercise in England by a complete Territorial Armoured Division. The exercise lasted three days and will be used largely as a yardstick to judge the standard that can be attained by armoured divisions of the Territorial Army as part of the reserve force.

52nd (Lowland) Infantry Division, T.A.—The 52nd (Lowland) Division, T.A., concluded its annual training on Salisbury Plain early in June with Exercise " Epsom Down," in which the 30th Armoured Brigade and 155th Infantry Brigade with the Divisional Artillery and Royal Engineers practised the exploitation of a supposed successful attack by two imaginary infantry brigades on an enemy position. The ' enemy ' were represented by the 4th Royal Tank Regiment, the 44th/50th Royal Tank Regiment, T.A., the 1st Battalion, The Worcestershire Regiment, and the 1st Battalion, The Rifle Brigade.

9th Independent Armoured Brigade, T.A.—This Armoured Brigade was in camp, as a brigade, on Salisbury Plain, for the first time since the war, during the second half of June. The first week was given to squadron and regimental tactical schemes and a brigade exercise. Training during the second week included an exercise involving wide dispersion, rapid concentration, and rapid redispersion to minimize the effect of possible enemy atomic attack.

Territorial Army Commissions

To meet a pressing need for locally resident officers, Territorial Army commissions may now be granted to other ranks in the T.A. without attendance at a War Office selection board and an officer cadet school.

The scheme, announced by the War Office on 29th April, is supplementary to the existing procedure and does not take its place. There is no question of accepting any lowering of standards. Under the new arrangements a T.A. soldier who is recommended by the commanding officer of his local unit is enabled to appear before a command selection board, and if approved, to obtain his commission.

It has been found that National Service men develop leadership qualities, character, and a mature personality at varying stages of their five and half years whole- and part-time service. Many men develop late and have not, therefore, been commissioned during their whole-time service. From such men who are resident in the area of their units it is expected to fill the officer gap in T.A. units, especially in A.A. Command where the importance of local residence is vital. In units in the north and west of England there is also a notable shortage of officers and they have had to accept ' long range ' National Service officers from the south and east.

A number of safeguards are created for ensuring that each National Service man selected under this new scheme will become with training and experience as fully competent an officer as those who obtained commissions during whole-time service or who obtain commissions whilst at part-time service under the existing rules. His initial recommendation must come from his future commanding officer who is thus prepared to accept him as an officer in his own regiment. A board fully constituted and with Territorial Army officer representation then interviews and selects.

The new procedure is as follows :—

(*a*) The applicant serves for one year and attends one annual camp with his Territorial Army unit.

(*b*) The Territorial Army commanding officer recommends his application for a commission in his own regiment.

(*c*) The applicant appears before a command selection board composed of a major-general as chairman, a brigadier, two Territorial Army commanding officers and a representative of the local Territorial and Auxiliary Forces Association. The applicant's brigadier and a field officer from his Regiment/Corps attend the Board. A full record and reports from any previous War Office selection board are before the board during the interview.

(*d*) The applicant if granted his commission attends a command training course during his next annual camp.

The whole scheme is optional to G.Os.C.-in-C. of Commands who will be guided solely by the requirement for locally resident officers in the units concerned.

Women as Emergency Reservists

It has been announced by the War Office that recruiting of Emergency Reservists in Queen Alexandra's Royal Army Nursing Corps began on 1st June. Fifteen hundred officers and other ranks are needed for service in General Hospitals and Casualty Clearing Stations at home and abroad in the event of a national emergency.

Volunteers will receive pay and allowances for the completion of a 15-day training period annually, and in most cases will be eligible for an annual bounty. Commissions may be granted to State Registered Nurses under the age of 40, and to ex-officers of the Army Nursing Services up to 52 years of age. Enlistment as other ranks is open to ex-Service women of Q.A.R.A.N.C., W.R.A.C., A.T.S., and V.A.D., who have qualifications in one of the following occupations :—clerk (R.A.M.C.), dispenser, laboratory technician, nursing orderly, operating theatre technician, physiotherapist, radiographer, and transfusion orderly.

War Memorials

British Expeditionary Force, 1914.—A Memorial to the British Expeditionary Force of 1914 was unveiled at St. Martin-in-the-Fields on 30th May by Field-Marshal Lord Ironside. About 1,500 Old Contemptibles and representatives from the Services, ex-Service organizations, British Commonwealth countries, Belgium, France, and the United States were present. The Memorial is a black marble arch bearing the inscription " Mons to Ypres, 1914 ".

ROYAL ARMY PAY CORPS.—A Book of Remembrance of members of the Royal Army Pay Corps who died during the 1939–45 War was dedicated and placed in the Corps' garrison chapel at Waller Barracks, Devizes, on 9th June. The Book was dedicated by Canon V. J. Pike, Chaplain-General to the Forces.

MISCELLANEOUS

PRESENTATION OF COLOURS.—Lord Wakehurst, Governor of Northern Ireland, presented new Colours to the 1st Battalion, The King's Own Scottish Borderers, at Ballykinlar Camp, Co. Down, on 8th May, in the absence, through illness, of H.R.H. the Duchess of Gloucester, Colonel-in-Chief of the Regiment.

THE ROYAL REGIMENT OF ARTILLERY RECEIVES FREEDOM OF WOOLWICH.—Field-Marshal Lord Alanbrooke, the Master Gunner, received on behalf of the Royal Regiment of Artillery the freedom of the borough of Woolwich at a ceremony on 28th May.

MILITARY TATTOOS.—A military tattoo produced by Northern Command took place each evening at Roundhay Park, Leeds, from 28th June to 3rd July. On 6th, 7th, and 8th July, a military searchlight tattoo was staged at Windsor during the period of the Royal Show.

NEW TERRITORIAL ARMY DRILL HALL.—A new drill hall for two of the four batteries of the 656th Light Anti-Aircraft Regiment, R.A. (Tower Hamlets), T.A., in Mile End Road, London, E., was opened by Mr. Arthur Henderson, Q.C., M.P., on 6th May.

MEDALLION PRESENTED TO BRIGADIER SIR JOHN HUNT.—The first-class medallion of the Soviet Climbing Association was presented to Brigadier Sir John Hunt when he lectured on the ascent of Everest at the British Embassy in Moscow in June.

BISLEY.—The Royal Navy won the United Service Challenge Cup. The Royal Marines won the Inter-Services XX Match. Major W. H. Baudains, Royal Ulster Rifles, won The Queen's Medal and Army Championship. R.Q.M.S. F. Broughton, 14th Parachute Battalion, T.A., won The Queen's Medal and the Territorial Army Championship. The Ashburton Shield was won by Allhallows School, Uppingham School was second, and Marlborough College third.

DOMINIONS AND COLONIES

CANADA

H.M. THE QUEEN.—The Queen has approved the formation of The Regiment of Canadian Guards, and has consented to be the Colonel-in-Chief.

The Queen has approved the appointment of Queen Elizabeth the Queen Mother as Colonel-in-Chief of the Royal Canadian Army Medical Corps.

APPOINTMENTS.—Major-General J. D. B. Smith, C.B.E., D.S.O., C.D., has been appointed Commandant of the National Defence College at Kingston in succession to Air Vice-Marshal C. R. Dunlap, C.B.E., C.D.

Brigadier J. M. Rockingham, C.B., C.B.E., D.S.O., is to be promoted to Major-General and will become Commander, 1st Canadian Infantry Division in September, 1954.

Brigadier J. V. Allard, C.B.E., D.S.O., E.D., will succeed Brigadier J. M. Rockingham as Commander, 3rd Canadian Infantry Brigade.

Brigadier R. M. Bishop, O.B.E., E.D., has been appointed Commander, 1st Canadian Division Artillery.

Colonel E. H. Webb, D.S.O., C.D., will become Chief Engineer in September, 1954.

Colonel W. P. Shirreff, O.B.E., C.D., will become Director of Weapons and Development at Army Headquarters in September, 1954.

Colonel D. B. Buell, D.S.O., C.D., has been appointed Director of Militia and Cadets.

THE CHIEF OF THE GENERAL STAFF VISITS GERMANY.—Lieut.-General G. G. Simonds, Chief of the General Staff, visited Germany early in May and spent three days with the 1st Canadian Infantry Brigade during battalion training.

CAMP GAGETOWN.—The 3rd Canadian Infantry Brigade carried out collective training at Camp Gagetown this Summer, being the first formation to use this new training area. The 2nd Canadian Infantry Brigade trained at Camp Wainwright.

SHORTER PERIOD OF SERVICE FOR MILITIA.—The period of enlistment or re-engagement in the Reserve Force, now the Canadian Army Militia, has been reduced from three to two years; though in the case of the Royal Canadian Engineers, Royal Canadian Corps of Signals, and Royal Canadian Electrical and Mechanical Engineers, men will be given the option of signing for either a two- or three-year period.

WOMEN NURSING ASSISTANTS.—A class of women nursing assistants is being enrolled for the Royal Canadian Army Medical Corps. Successful candidates will be enrolled for three-year terms and will undergo a 15-week training period with the R.C.A.M.C. at Camp Borden. The training programme has been designed to qualify the candidate for non-commissioned rank and to enable her to obtain a civilian certificate as a nursing assistant on the completion of her first term of engagement. Those having the necessary qualifications and who re-engage for a second three-year term will be considered for more advanced training. Terms of enrolment require that applicants be Canadian citizens between 19 and 25 years of age, physically fit, single or widowed with no dependants, and junior matriculates.

MILITARY EQUIPMENT SENT TO EUROPE.—Eighty-five three-ton military trucks were shipped to the Turkish Army in April. Military-type trucks were sent to the United Kingdom, to the French in Algeria, and to Denmark in May. Ammunition and vehicle spare parts were dispatched to the United Kingdom, trucks and electronic equipment to Turkey, and ammunition and vehicle spare parts to Denmark, Italy, and Portugal during June. Field and anti-aircraft guns, ammunition, trucks and tools were shipped for Belgium, Italy, Portugal, and Turkey during July.

AUSTRALIA

H.M. THE QUEEN.—The Queen has been graciously pleased to approve the appointment of the following officers as Aides-de-Camp to Her Majesty :—

Permanent Military Forces : Brigadier J. G. N. Wilton, D.S.O., O.B.E. (14th April, 1954), vice Brigadier R. G. Pollard, D.S.O., tenure expired; Brigadier L. G. Canet (20th June, 1954), vice Brigadier G. E. W. Hurley, O.B.E., tenure expired. *Citizen Military Forces :* Brigadier H. H. Hammer, C.B.E., D.S.O., E.D. (14th April, 1954), vice Brigadier G. S. Cox, D.S.O., M.C., tenure expired.

HONOURS AND AWARDS.—The following appointment to the Royal Victorian Order was published in *The London Gazette* of 27th April :—

K.C.V.O.—Lieut.-General F. H. Berryman, C.B., C.B.E., D.S.O.

The following was included in H.M. The Queen's Birthday Honours List :—

C.B.—Lieut.-General (temporary) H. Wells, C.B.E., D.S.O.

APPOINTMENTS.—Brigadier I. R. Campbell, C.B.E., D.S.O., has been appointed Commandant, Royal Military College, Duntroon, with the temporary rank of Major-General.

Brigadier A. G. Wilson, D.S.O., will become G.O.C., Central Command (S.A.), on 27th August, with the temporary rank of Major-General.

Brigadier K. D. Chalmers has been appointed Director of Ordnance Services, Army Headquarters.

Brigadier A. D. Molloy has been appointed Commander, Tasmanian Command.

Brigadier F. B. McAlister, C.B.E., has been appointed Commander, Royal Australian Artillery, 1st Corps.

Colonel C. N. Peters, M.V.O., O.B.E., has been appointed Commandant, Australian Staff College, Queenscliff, and promoted to the rank of Brigadier.

Colonel J. W. Harrison, O.B.E., has been appointed Australian Army Representative, Australian Army Staff, United Kingdom, with the rank of Brigadier.

Colonel C. E. Long has been appointed Australian Army Representative in Washington.

MODERN WEAPONS.—Reviewing improvements in the training, equipment, and fighting technique of the Australian Army, Mr. Joseph Francis, the Minister for the Army, said in a recent statement that developments had made it necessary to equip the soldier and especially the infantryman with powerful means of defence which, without impairing his mobility or ease of concealment, provided him with the possibility of defeating the tank and meeting the threat of high-speed low-flying aircraft. To meet these requirements, Mr. Francis said that an ideal means of defence for the infantryman at close quarters was afforded by the No. 94 anti-tank grenade. Exceptionally powerful for its weight, this grenade could perforate a great thickness of armour and could be fired from a service rifle. For longer ranges, the 3.5-inch rocket launcher could be aimed and fired by one man, the gun crew being completed by one ammunition member who loaded the launcher; while the 120-mm. B.A.T. was a towed anti-tank gun for taking on tanks at still greater distances.

To give continuous fire support to fast cruiser tanks, an Australian-designed equipment had been produced which was fundamentally a General Grant tank chassis on which was mounted a 25-pounder gun, a self-contained unit having a crew of a commander, driver, and four gun members.

To meet the threat of high-speed low-flying aircraft, it had been necessary to give a higher angular rate of movement to the 40-mm. Bofors. It had also been found that, to cope with transsonic and supersonic aircraft, the L.A.A. gun should have built into the equipment servo motors which would both traverse and elevate the gun at a speed in excess of that which could be achieved by manual laying, and Australia would have some of these converted guns very shortly.

NEW ZEALAND

HONOURS AND AWARDS

The following was included in H.M. The Queen's Birthday Honours List :—

C.B.—Major-General W. G. Gentry, C.B.E., D.S.O.

ADEN

H.M. THE QUEEN

The Queen took the salute at a military parade which included armoured cars and a camel troop of levies at Aden on 27th April.

UGANDA

H.M. THE QUEEN

The Queen presented Colours to the 4th (Uganda) Battalion, King's African Rifles, at Jinja on 29th April.

FOREIGN

TURKEY

NEW CHIEF OF GENERAL STAFF

General Nurettin Baransel, C.-in-C. of the Turkish Army, has become Chief of the General Staff in succession to General Nuri Yamut, who was elected to the Grand National Assembly in the recent elections.

AIR NOTES

GREAT BRITAIN

H.M. The Queen

Commonwealth Air Forces Memorial in Malta.—On 3rd May, The Queen unveiled in Malta the Commonwealth Air Forces Memorial, which commemorates 2,300 aircrew who lost their lives operating from Malta and other bases in the Mediterranean, and who have no known grave. The Queen was accompanied by the Duke of Edinburgh and the Governor of Malta, while the Secretary of State for Air and many senior officers were in attendance.

R.A.F. Escort for H.M. The Queen.—Aircraft of the Royal Air Force escorted H.M. Yacht *Britannia* during The Queen's return voyage from the time it left Gibraltar on 11th May until it reached the Nore on 15th May. When the Royal Yacht reached Woolwich later in the day, 96 Meteors and 24 Sabres of Fighter Command, 24 Sabres of the Royal Canadian Air Force, and 36 Canberras of Bomber Command flew past in salute.

Fly-past on The Queen's Birthday.—On 10th June, jet aircraft of No. 500 (County of Kent) Squadron, No. 501 (County of Gloucester) Squadron, and No. 603 (City of Edinburgh) Squadron flew over Buckingham Palace in salute.

Presentation of Squadron Standard.—The Princess Margaret presented a Squadron Standard to No. 20 Squadron at R.A.F. Station, Oldenburg, on 13th July.

Honours and Awards

The honours conferred by H.M. The Queen on the occasion of her Birthday included the following :—

K.C.B.—Air Marshal Sir John N. Boothman, K.B.E., C.B., D.F.C., A.F.C.

C.B.—Air Vice-Marshal H. H. Brookes, C.B.E., D.F.C.; Air Vice-Marshal J. G. Franks, C.B.E.; acting Air Vice-Marshal P. D. Cracroft, A.F.C.; Air Commodore R. Coats, M.A.; Air Commodore K. B. B. Cross, C.B.E., D.S.O., D.F.C.; Air Commodore D. G. Morris, C.B.E., D.S.O., D.F.C.; Air Commodore E. L. S. Ward, D.F.C.; Group Captain F. J. Manning, C.B.E.

G.B.E.—Air Chief Marshal Sir John Whitworth Jones, K.C.B., C.B.E. (retired).

K.B.E.—Air Marshal L. F. Pendred, C.B., M.B.E., D.F.C.; acting Air Marshal G. E. Gibbs, C.I.E., C.B.E., M.C.

Appointments

Air Ministry.—Air Vice-Marshal W. M. L. MacDonald, C.B.E., D.F.C., appointed Assistant Chief of Air Staff (Intelligence) (September, 1954).

Fighter Command.—Air Commodore G. P. Chamberlain, C.B., O.B.E., appointed Air Officer in charge of Administration, with the acting rank of Air Vice-Marshal (July, 1954).

Home Command.—Air Commodore F. J. St. G. Braithwaite, C.B.E., appointed Air Officer Commanding, No. 61 Group, with the acting rank of Air Vice-Marshal (May, 1954).

Middle East Air Force.—Air Commodore J. N. T. Stephenson, C.B.E., appointed Senior Air Staff Officer, with the acting rank of Air Vice-Marshal (June, 1954).

Far East Air Force.—Air Vice-Marshal F. J. Fressanges, C.B., appointed Commander-in-Chief, Far East Air Force, with the acting rank of Air Marshal (November, 1954).

Promotions

Marshal of the Royal Air Force.—Air Chief Marshal to be Marshal of the Royal Air Force :—Sir William F. Dickson, G.C.B., C.B.E., D.S.O., M.C. (1st June, 1954).

Air Vice-Marshals.—Air Commodores (acting Air Vice-Marshals) to be Air Vice-Marshals :—J. L. F. Fuller-Good, C.V.O., C.B.E. ; W. J. Crisham, C.B., C.B.E. ; J. N. T. Stephenson, C.B.E. ; P. D. Cracroft, C.B., A.F.C. ; S. R. Ubee, C.B., A.F.C. ; H. D. McGregor, C.B., C.B.E., D.S.O. ; F. J. St. G. Braithwaite, C.B.E. (1st July, 1954).

Air Commodore to be Air Vice-Marshal :—W. M. L. MacDonald, C.B.E., D.F.C. (1st July, 1954).

Air Commodore to be acting Air Vice-Marshal :—H. P. Fraser, C.B., C.B.E., A.F.C. (15th April, 1954).

Retirements

The following officers have retired :—Air Chief Marshal Sir William Elliot, G.C.V.O., K.C.B., K.B.E., D.F.C., A.D.C. (18th April, 1954) ; Air Vice-Marshal S. C. Strafford, C.B., C.B.E., D.F.C., retaining the rank of Air Marshal (9th June, 1954) ; Air Vice-Marshal W. J. Seward, C.B., C.B.E. (31st May, 1954) ; Air Vice-Marshal D. V. Carnegie, C.B., C.B.E., A.F.C. (12th June, 1954) ; Air Vice-Marshal S. D. Macdonald, C.B., C.B.E., D.F.C. (15th March, 1954).

R.A.F.V.R.—The following Group Captains relinquish their commissions retaining the rank of Air Vice-Marshal :—Sir Stanford Cade, K.B.E., C.B., F.R.C.S. ; Sir John Conybeare, K.B.E., M.C., M.D., F.R.C.P.

Operations

R.A.F. Harvards' Good Work against Mau Mau.—In April, 1953, No. 1340 Flight of 12 R.A.F. Harvard training aircraft, from what was then the Rhodesian Air Training Group in Southern Rhodesia, were flown to Kenya by instructor-pilots from the Group's schools to enter operational service against the Mau Mau.

Since then, the flight has built up an impressive operational record over the forests of the Aberdare mountains. It includes more than 2,000 sorties flown ; more than 600 targets attacked ; 15,000 bombs dropped ; 750,000 rounds of machine-gun ammunition fired ; and important parts played in joint air-ground actions resulting in the killing or capture of Mau Mau leaders.

Perhaps the flight's most important contribution to the anti-Mau Mau campaign in recent months was its long series of harassing strikes in support of ground forces, aimed at breaking up gangs in the Mount Kenya area. The Harvard attacks repeatedly forced these gangs, directed by ' General China ', to flee from hideout to hideout. Twice ' China's ' own gang, exceeding 100 men armed with Bren guns, automatic pistols, and the latest type of home-made rifles with lathe-turned barrels, were attacked and dispersed by the Harvards and only narrowly escaped capture by the Army. Eventually, sustained air attacks trapped ' China ' himself, and he was wounded and taken prisoner.

Paratroop Training in Malaya.—The Far East Parachute School at Royal Air Force Station, Changi, Singapore, celebrated its second anniversary in June. More than 600 paratroops have so far taken the course and earned the right to wear the paratroop badge.

The need for such a training establishment in Malaya began with Operation "Helsby", when 54 paratroops of the 22nd Special Air Service were dropped on to a paddy field in north Malaya in February, 1952.

Organization

Northolt to be returned to the R.A.F.

Northolt Airport is to be handed back to the R.A.F. and will be closed to civil flying after 31st October. This was stated on 12th May by the Minister of Transport and Civil Aviation in a written Parliamentary reply. All the civil air services will be transferred to London Airport. Northolt will then cease to be available for civil aircraft as a regular terminal or alternative airfield. It is one of the R.A.F.'s oldest airfields and will be invaluable for training reservists in the London area. It has been on loan to the Ministry of Civil Aviation since 1946.

Materiel

Vickers 1000—the new Army Transport.—Britain's first jet-propelled military transport, the Vickers 1000, has been chosen to replace the Handley-Page piston-engined Hastings and is now being built by Vickers-Armstrongs as a prototype. An order is being placed which will enable the firm to begin economical production in series. The aircraft has been designed to meet the special needs of military transport and will be powered by four Rolls-Royce Conway engines. Long range strategic movements of troops will be its primary role, but it could also be used for freight. It has been stated that five Vickers 1000s can transport a battalion of infantry to Kenya within 18 hours. It will carry 120 troops with their personal arms and equipment for stage-lengths of up to 2,500 miles and will be equipped with an internal lift for loading. The Vickers 1000 is a swept-wing aircraft, similar to the Vickers Valiant four-engined bomber. A further order for Blackburn and General Aircraft Beverley transport aircraft, powered by four Bristol Centaurus piston engines, has also been announced. This type can carry heavy equipment loaded at the tail and can drop airborne troops and supplies.

New Shackleton version.—A new version of the Avro Shackleton maritime reconnaissance aircraft, the Mark 3, fitted with a tricycle undercarriage, is in production for R.A.F. Coastal Command. It has also been ordered for the South African Air Force.

Hunter Modifications.—Modifications to the dive brakes have been found necessary on the Hawker Hunter jet fighter before it is put into squadron service later this year, it was learned from the Ministry of Supply on 22nd April. This, it is understood, does not mean that any new additional piece of equipment is needed for the aircraft. While undergoing tests, the modifications in the dive brakes were found to be necessary, and for some time work on the problem has been going on at the highest priority level.

Successful Flight of Jet Provost.—Hunting Percival's P.84 jet Provost trainer made successful initial flights recently. The jet Provost is the world's first basic jet training aircraft expressly designed to train pilots from the beginning of their flying career. While it has jet flying performance and handling characteristics, it retains the docile handling qualities of the piston-engined Provost. It is powered by an Armstrong-Siddeley Viper ASV.5 axial flow turbo-jet engine. The aircraft is essentially a military trainer and is not likely to be used for training civil airline pilots. The Mk. 1 Provost has, however, been exported for use by the Southern Rhodesian, Burmese, and Irish air forces, and Hunting Percival hope that there may in time be export prospects for the jet version.

One Hundred R.A.F. Helicopters on Order.—The Under-Secretary for Air said in the House of Commons recently that there were some 20 helicopters in service with the R.A.F. They were of two types, Dragonflies and Sycamores. Outstanding orders amounted to 100, of which about half should be delivered in the next 12 months.

Reserves

Silver Jubilee for County of Gloucester R.Aux.A.F. Squadron

No. 501 (County of Gloucester) Royal Auxiliary Air Force Squadron, which played a notable part in the Battle of Britain and in defending London from the flying bomb

attacks, celebrated its silver jubilee on 14th June. The Honorary Air Commodore of the Squadron is H.R.H. the Duke of Gloucester. The squadron is equipped with Vampire 5 aircraft.

Miscellaneous

Escort for the King and Queen of Sweden.—Eighteen Canberras of Bomber Command provided an escort for Their Majesties the King and Queen of Sweden on their arrival in the Thames on 28th June.

Unveiling Ceremony in Lincoln Cathedral.—Many relatives of the 55,000 men of Bomber Command aircrew who lost their lives in the last war attended a ceremony in Lincoln Cathedral on 8th May, when a memorial stained glass window to the Command's fallen was unveiled. The unveiling ceremony was performed by Air Marshal Sir George Mills, Air Officer Commanding-in-Chief, Bomber Command, and it was dedicated by the Lord Bishop of Lincoln. The Secretary of State for Air and a large number of senior officers and other distinguished persons were present.

Battle of Britain Week.—Fifty-eight R.A.F. Stations will be at home to the public on Saturday, 18th September, during this year's Battle of Britain week.

Canberra Intensive Flying Trials.—A Canberra PL7, of R.A.F. Bomber Command, has completed 300 hours flying in 25 days. It covered a distance of about 156,000 miles, equal to more than half way to the moon. It was engaged on intensive flying trials which are undertaken by all new types of aircraft entering the R.A.F. service.

Presentation of Standard to No. 25 Squadron.—On 21st June, Air Marshal Sir Dermot Boyle, Air Officer Commanding-in-Chief, Fighter Command, presented the Standard to No. 25 (night fighter) Squadron at R.A.F. Station, West Malling.

Presentation of Standard to No. 12 Squadron.—On 23rd June, Marshal of the Royal Air Force Lord Newall, a former Chief of the Air Staff, presented the Standard to No. 12 (bomber) Squadron at R.A.F. Station, Binbrook. He commanded the squadron in 1915.

Presentation of Standard to No. 30 Squadron.—On 1st July, Air Chief Marshal Sir James Robb presented the Standard to No. 30 Squadron at R.A.F. Station, Dishforth. He commanded the squadron in 1924–25.

Presentation of Standard to No. 502 (Ulster) Squadron.—On 24th May, Lord Wakehurst, Governor of Northern Ireland, presented the Standard to No. 502 Squadron at R.A.F. Station, Aldergrove.

Dacre Trophy.—This trophy, awarded annually to the Regular squadron in Fighter Command showing the greatest proficiency in weapon training, was won in 1953 by No. 19 Squadron.

Esher Trophy.—The Esher Efficiency Trophy, awarded annually to Royal Auxiliary fighter squadrons for operational efficiency, was won in 1953 by No. 615 (County of Surrey) Squadron.

DOMINIONS AND COLONIES

CANADA

Senior Officers' Appointments.—Air Vice-Marshal J. L. Plant, C.B.E., A.F.C., was appointed Air Member for Technical Services at Air Force Headquarters in Ottawa in July.

Air Vice-Marshal F. R. Miller, C.B.E., Vice-Chief of the Air Staff, was appointed Chief of Staff to the Air Deputy of the Supreme Commander at S.H.A.P.E. in August.

Sabre Aircraft.—Canadair's 1,000th Sabre was delivered on 20th April at Montreal at a ceremony attended by Mr. Brooke Claxton, Minister of National Defence.

AUSTRALIA

HONOURS AND AWARDS.—The following was included in the Second Supplement to *The London Gazette* of 30th April :—

C.B.—Air Vice-Marshal F. R. W. Scherger, C.B.E., D.S.O., A.F.C., in recognition of his services as A.O.C., Malaya.

NEW AIRCRAFT.—The R.A.A.F. has ordered over 70 Avon Sabres and 48 Canberra bombers.

SOUTH AFRICA

S.A.A.F. RE-EQUIPMENT

The South African Air Force is now re-equipping its two permanent squadrons with Vampires in the place of Spitfires.

INDIA

TWENTY-FIRST ANNIVERSARY

In April, Air Chief Marshal Sir William Dickson, Chief of the Air Staff, sent a message to Air Marshal Subroto Mukerjee congratulating him on the 21st anniversary of the foundation of the Indian Air Force.

FOREIGN

CHINA

JET AIRCRAFT FACTORY FOR CHINA

Reports reaching Formosa indicate that a large new jet aircraft factory, the first in China, is to be constructed at Hangyang, near Hangkow, known in Nationalist time as " the arsenal of China ", and that £35,000,000 of Russian capital and 150 Soviet experts and technicians will be lent for the project.

FRANCE

NORD 2501 PRODUCTION

It is reported that 120 Nord 2501 Noratlas ordered by *L'Armée de l'Air* are now being produced at the required speed, 34 having been delivered by the end of June. In addition, the *Société Nationale de Constructions Aéronautiques du Nord*, in its factory at Sartrouville, is now said to be turning out more than six Norvigie NC-856 artillery observation aircraft a month.

RUSSIA

SOVIET AIR STRENGTH.—The Under-Secretary to the Foreign Office, replying to Mr. A. Henderson about the strength of Soviet armed forces, said in the House of Commons on 10th May that manpower in the air forces in the Soviet Union had remained at about 800,000 and the number of aircraft at 19,000–20,000, but there had been a steady replacement of piston-engined fighters and light bombers with jets. In 1951, 20 per cent. of the fighters were jet-propelled ; now, the figure was nearly 100 per cent. The percentage of light bombers now jet-propelled was more than 66⅔ ; in 1951 it was nil. The number of TU4 medium bombers in operational units had doubled since 1951. In the satellites and East Germany, manpower had increased from 50,000 in 1951 to nearly 90,000. The total aircraft strength, which was about 2,000, had almost doubled. About half the aircraft were jet fighters.

NEW SWEPT-WING JET BOMBER.—A very large multi-jet swept-wing bomber led the mass formation fly-past over Moscow on May Day this year. This bomber was escorted by four single-jet fighters and was followed by three new-type twin-jet bombers. It is reported that the fighter escorts were probably of a new single-jet type with a span possibly greater than the 33 feet span of the MIG-15 ; and that the spans of the bomber

and the twin-jet bombers which followed it were probably 170–180 and 100 feet, with gross weights of 240,000 lb. and 100,000 lb. respectively. As the big bomber appeared to have four jet engines and inlets of between four and five feet in diameter, technical experts estimate that each of these is likely to deliver some 15,000 lb. thrust; that all indications of the installation point to the possibility that the engines are either ducted fans or bypass engines, as also does application in a bomber where long range and good fuel economy are of the greatest importance; and that although a conventional turbo-jet engine of large diameter is not impossible, the location, shape, and size of the inlets indicate a more original power plant.

SPAIN

Delivery of Jet Trainers

The Spanish Air Force took delivery of its first jet trainer aircraft when six T-33 (Shooting Star) trainers arrived from a U.S.A.F. base in Germany on 24th March. Three more T-33s arrived at Barcelona on 1st May. These aircraft were delivered under the U.S.-Spanish military aid pact.

These trainers, whose Spanish designation is the E-15, are stationed at Talavera La Real (Badajoz), Spain's first jet flying school.

SWEDEN

Swedish Air Force Orders Pembrokes.—A contract for a substantial number of Pembrokes has been signed between Hunting Percival and the Swedish Government on behalf of the Royal Swedish Air Force. Normally equipped for the carriage of eight passengers in rearward-facing seats, these particular Pembrokes will be provided with accommodation for 10. Since the Pembroke (two Alvis Leonides) first went into R.A.F. service in 1952, the type has also been supplied to the Royal Belgian Air Force and Southern Rhodesian Air Force.

New Swedish Lansen.—It is reported that Sweden's new SAAB-32 Lansen, a transsonic all-weather jet two-seater, is intended for attack duty, night fighter operations, and reconnaissance work; and that this 700 m.p.h. aircraft, powered in its present production version by a Swedish-built Rolls-Royce Avon RA.7 turbo-jet with afterburner, will enter service next year. The first of several prototypes now flying made its initial flight in November, 1952. Guided missiles, stated to be under active development in Sweden, are likely to be carried by this aircraft.

Closed Circuit Speed Record Claim.—A new world speed record was claimed on 6th May by Captain Anders Westberg of the Royal Swedish Air Force. He flew a Swedish-built SAAB J29 jet fighter at an average of 607.075 m.p.h. on a closed circuit of 310 miles. The previous record, 590.298 m.p.h., was held by a U.S. Sabre.

UNITED STATES

New Fighter Orders.—The U.S.A.F. has signed contracts with two aircraft companies calling for delivery of almost $109,000,000 worth of jet fighters and trainers. According to the synopsis of contract awards published by the Commerce Department, Consolidated Vultee Aircraft Corp., San Diego, California, received an Air Force order for $74,942,059 worth of jet aircraft. The contract calls for 37 F-102 delta-winged supersonic interceptors and 20 TF-12 jet trainers. The McDonnell Aircraft Corp., St. Louis, received an Air Force contract for $34,025,262 worth of new fighters. It will deliver 28 reconnaissance versions of its F-101 jet fighter.

First Production B-52 Completed.—Boeing's first production model of the B-52 came off the assembly line recently. The B-52 has a wing span of 185 feet, and is 153 feet long; its tail is 48 feet high, and the tail fin folds for ground handling. Costing $5,000,000 a machine, it is powered by eight Pratt & Whitney J-57 jets of 10,000 lb. thrust each. Gross weight of the plane is well over 350,000 lb.

A $20,152,000 Air Force contract for production facilities for Boeing B-52 Stratofortresses has been awarded to Boeing Airplane Co.'s Wichita, Kansas, Division, according to the Commerce Department's current synopsis of contract awards. Boeing at Wichita is a second source producer for B-52s, which are already in production under prime contract at Boeing's Seattle, Washington, plant.

NEW FIGHTER-BOMBER.—The U.S.A.F. Flight Test Centre is reported to be flight testing the Republic YF-84J. This variant of the Thunderstreak is said to be powered by a General Electric J73 of about 9,200 lb. thrust instead of the 7,200 lb. thrust Wright J65 used in the F-84F. The YF-84J is said to be capable of carrying tactical atomic weapons.

THE THUNDERSTREAK FOR SERVICE SOON.—The transsonic Sapphire-powered Thunderstreak is now reported to be entering the U.S.A.F. service, the first two units to be equipped with these aircraft being the 27th and 506th Strategic Fighter Wings which are part of Strategic Air Command.

THE CONVAIR XFY-1.—Convair report that their XFY-1 vertical take-off fighter has made its first tethered flight test.

HONEYCOMB STRUCTURE FOR PILOTLESS BOMBER.—It is reported that eighty per cent. of the Matador pilotless bomber's wing and tail and some internal structure is made of a honeycomb-like material which has its covering skin bonded to it by an adhesive. The honeycomb core was produced in an elementary form as early as 1939 and the problem of finding a usable adhesive was solved by 1942. The material as produced by the Honeycomb Co. of America under Martin licence, consists of hexagonal cells formed from aluminum foil strips. The foil gauge may vary from 0.0015 to 0.006. The size of the individual cells is generally either $\frac{3}{8}$ inch or $\frac{1}{4}$ inch. The core's density ranges from two to 30 lb. per cubic foot. This core fills the entire interior of the Matador's wing.

ARMY HELICOPTER PLANS.—It is reported that the Army's long-term plans for the Sikorsky H-37 (S-56) twin-engined helicopter include some 250 of these rotorcraft. This would make the Army the biggest user of this helicopter type.

REVIEWS OF BOOKS

GENERAL

Strategy for the West. By Marshal of the Royal Air Force Sir John Slessor, G.C.B., D.S.O., M.C. (Cassell.) 9s. 6d.

It is strange how rare, even in the latter half of the XXth Century, is the forward-looking man. For every man who is able to look forward clearly and boldly, there are many who look backwards, and many more who do not look at all.

Such a forward-looking man is Marshal of the Royal Air Force Sir John Slessor, whose book *Strategy for the West* deserves to be widely read and discussed. He believes that as long as the North Atlantic Treaty Powers possess nuclear and thermo-nuclear weapons with powerful bomber forces capable of delivering them, and an unshakeable determination not to shrink from using these weapons if our vital interests are imperilled, global war is an out of date conception. For no one can win such a war " in the sense of creating world conditions more favourable to yourself than if there had never been a war." On the contrary, resort to full-scale war will bring down at once on the heads of both sides the thing they most dread—universal destruction and utter catastrophe.

The struggle between Communism and the free world is therefore not likely to blaze up into a third world war, so long as we do not fall into the trap and abolish our master weapons—the great deterrent. The struggle will continue along the familiar cold war lines, with perhaps limited wars such as we have seen in Korea, or, more likely, insurrections fomented and encouraged by international Communism, such as we have seen in Indo-China, Malaya, Kenya, etc.

Discussing the strength we need, Sir John Slessor outlines the way in which he suggests the Army and Navy should be organized and equipped to deal with the tasks that lie ahead of them. Developing the theme that air power is now the primary arm, he analyses the presumption that atomic air power is a decisive instrument. He shows that, as Sir Winston Churchill said at Boston, Mass., in 1949, " air mastery is to-day the supreme expression of military power ", and that " the bomber is the primary agent of air mastery."

Finally, he deals realistically with the conflict in Europe, and in particular the partition of Germany, and indicates a way in which air power may be used as a key to resolve it. He has little use for the E.D.C., and puts forward a scheme—based on an extended Brussels Treaty and Sir Winston Churchill's ' Locarno ' idea—in which the sanction must be air power. The basic principle for its use would be that underlying the system of ' air control,' successfully used by the Royal Air Force in Iraq, India, and the Aden Protectorate. The ' big stick ' of atomic bombing would be employed only after a stern and sufficient warning. Bluffing would, of course, be useless, and we should have to be prepared to strike, if necessary, and strike hard with overwhelming force. He finds it difficult to believe that " in the face of this procedure, backed by the atomic and hydrogen bomb, anyone would in fact persist in a course leading to their use " ; a conclusion, perhaps, with which few would disagree.

It is impossible in a brief review to convey more than the barest outline of this carefully thought-out and closely reasoned book, which sets out to show that if we have the courage and skill to take advantage of the master weapons of our age we may never have to use them, and global war will become a thing of the past. If we have not the skill and courage—if we seek to abolish and ignore them—then we are lost, and deserve to be lost.

The Decisive Battles of the Western World and their Influence upon History, Volume I : From the Earliest Times to the Battle of Lepanto, 1571. By Major-General J. F. C. Fuller, C.B., C.B.E., D.S.O. (Eyre and Spottiswoode.) 30s.

This volume is the first of three designed to replace a work with a similar title, published in 1939–1940, dealing with a subject on which no single English book existed.

The new work has been expanded and almost completely rewritten. A continuous narrative is achieved by linking the author's selection of decisive battles by ' chronicles ' describing how wars arose and were shaped by their political origins. Lastly, the author makes deductions as to their influence on history.

Napoleon, who advised his officers to " read and re-read the campaigns of the great commanders " from Alexander to Frederick, complained in 1807 that not knowing what books were useful for the study of military history, he had wasted time by reading worthless tomes. This volume obviates the difficulty by providing the means of studying the conduct of war from the earliest times, of tracing the emergence of basic principles, and of noting the effect of sea power. But that is not all. The narrative records the development of armaments and tactics, particularly the introduction of missile weapons to cover or prevent movement. It also shows the development of organization and administration, the care exercised by the great commanders in supply matters, and the weaknesses of the Asiatic hordes who ' lived on the country.' The discerning reader cannot fail to appreciate the importance of moral factors from the earliest times and the effect of ' spirit ' on the fate of nations. He can observe, too, that the mistakes made by commanders and politicians in war through the ages bear a remarkable similarity to those common in modern times.

The decisive battles affecting England are Hastings, Sluys, 1340, and Crecy, 1346. Had the English navy been maintained there would have been no battle of Hastings, on the other hand, sea power and the battle of Sluys enabled Edward III to invade France. Harold is shown to have been a good general and his army by no means an untrained rabble. King Edward III may not have been a great strategist but he was an able tactician with an eye for country ; his army was well organized, disciplined, and highly efficient. The tactics employed at Crecy and Agincourt could well have inspired Wellington's methods in the Peninsular War.

In addition to its general theme, this volume contains fascinating information, such as a description of the organization of the Byzantine Army and its training manuals, and the use of ' gas ' in 1453 by the Turkish Sultan Mahomet II, the " first great gunner in history." Then the author claims that Queen Isabella of Spain at the end of the XVth Century " proved herself to be one of the ablest quartermaster-generals in history ", an opinion amply supported by the narrative.

The volume is well produced, and is provided with 25 clear sketch-maps and diagrams, footnotes relating to sources, and an adequate index. This is a valuable and interesting work ; students of war will look forward to the publication of the second and third volumes.

Communist Guerilla Warfare. By Brigadier C. Aubrey Dixon, O.B.E., and Otto Heilbrunn. (Allen and Unwin.) 18s.

Guerilla warfare is not new and we as a nation have had unrivalled opportunities of both directing and countering such operations, both in the past and in more recent times. The totalitarian States, however, have used all the modern means available to exploit the possibilities of this form of warfare, for to them it is only a continuation of the infiltration they practise in the ' cold war.'

In this book on Communist guerilla warfare, the authors have made a study of how Russia, and to a lesser degree China, have conducted such operations. The main part of their work is, however, devoted to the events on the eastern front between 1941–45, where sufficient evidence from both sides has survived to make an assessment possible. Though written in narrative form, it is nevertheless an important and timely contribution to our knowledge of this subject and it should appeal to a much wider public than that concerned with military science alone.

The book is divided into two principal parts, dealing respectively with the Russian system of organizing, controlling, and directing guerillas, and the German methods for countering them. If the German planners never took into consideration such activities,

the Russians, on invasion, immediately called upon their people to resort to guerilla tactics and, aided by the outworn German methods of repression and extermination, the numbers so employed soon reached significant proportions, for recruitment was based on despair and the need to kill or be killed.

The full scope of these operations may not have been generally realized in this Country, but it would appear that, in 1944, the Germans were forced to deploy more than 300,000 troops and police to oppose what had by then become a considerable force of well equipped, well led, and well maintained guerilla bands operating behind their front.

It is a pity that the records available are not complete enough to enable the authors to compare the numbers engaged and the casualties suffered with the results achieved, but that these could not have been negligible is borne out by the fact that the Germans considered it necessary to issue a manual on the conduct of such operations in 1944, a copy of which is attached as an appendix.

Though in modern war guerilla or partisan bands can be supported by an airlift and controlled by R/T, it is clear that they will meet with little success, comparable to the effort involved, unless the operations they are called upon to undertake are closely related to those of the main forces involved.

Brigadier Dixon and Dr. Heilbrunn rightly warn us of what we may expect in the event of a war with Russia, but one can only hope that they will consider the preparation of a further objective study of this very important form of warfare, based on all ' fronts ' since the year 1941. Both in its operational technique and in the counter measures employed, this form of war has seen many novel ideas exploited since 1945.

Underground from Posen. By Michael Duncan. (Kimber.) 12s. 6d.

In escaping from a prisoners of war camp the underground route has obvious advantages; cover from the sentry's gaze, the searchlight, the watch-dog, and the machine-gun bullet is greatly to be desired. Even so, the hazards peculiar to a tunnelling operation are formidable indeed. Colonel Duncan makes this clear in relating his adventurous experiences which begin in battle and end with a safe deliverance at the rock of Gibraltar. So little has been published regarding the experiences of the troops in the France and Flanders campaign of 1940 that the account in the opening chapters of the ordeal undergone by the 145th Brigade at Cassel and Hazebrouck is very welcome.

Captured at the end of May, Colonel Duncan and many others were soon despatched to Germany. Escape plans of a somewhat dashing nature were formulated soon after arrival at the underground fortress prison near Posen, but the tunnelling business was put in hand later, when the author and his friends were languishing at Biberach, which is within reasonable escaping distance of the Swiss frontier.

Escape by tunnelling has, of course, been attempted—and attempted successfully—before; but the difficulties involved, the meticulous organization required, and the demands upon the physical endurance of the tunnellers have never been described better. Tools had to be improvised, the workers below ground provided with light and air, and an elaborate security system devised to protect the enterprise from discovery over a period of many weeks. It is surprising how well the direction and levels of the tunnel were maintained considering that there was no sapper in the party; and the illumination and ventilation problems were solved by native ingenuity unaided by expert knowledge and advice. Success, too, could not have been attained without the loyal co-operation of many officers who were not to have a part in the actual bid for freedom. Needless to say, full advantage was taken of the German system of surveillance which, effective in many respects, seems to have been inadequate when pitted against the wits of our prisoners of war.

It is disappointing to read that of 26 men who made their escape from the camp through the tunnel only four got clear away. By general desire Colonel Duncan was the first to leave. Good fortune, combined with a patient endurance of considerable hard-

ship, enabled him to reach the frontier without any very dangerous encounter. Crossing into Switzerland presented no great difficulty, but he and the others who came through were still very far from home and took a long time to get there. The account of the secret journey through occupied France, over the Pyrenees, and thence southward through Spain is as exciting as many a thriller of fiction. It abounds in the unexpected turn of events and the appearance and disappearance of many queer characters of various nationalities. One feels that we should not have had this book—or at least not so good a book—had not the author been a conscientious diarist as well as a capable level-headed officer.

NAVAL

The War at Sea. Volume I. By Captain S. W. Roskill, D.S.C., R.N. History of the Second World War, United Kingdom Military Series. (H.M.S.O.) 42s.

The spectacle of sea power in operation is certainly a majestic one, and in his opening volume on the conduct of naval operations in the 1939–45 War Captain Roskill sets the stage in all its magnificence for the story he has to tell. It may be said straight away that he has, in this first volume, made a fine start in his great work.

For some 300 years Britain has made herself great, and retained that greatness, through the exercise of sea power. It has, in British hands, proved to be a devastating weapon, inexorable and relentless, and the outbreak of war in 1939 saw once again the historic weapon come into play. With a sureness of touch born of long use and understanding, the age-old battle for command of the sea began, and with its winning the downfall of Germany and Italy in the west, and of Japan in the east, was inevitable.

The period covered in this book by Captain Roskill is that in which the battle is joined and the early moves made to ensure that eventual command of the sea which alone can win a global war. As the book closes at the end of 1941 we can see the first signs of the victory at sea, an added brilliance of execution as the new ships and new weapons begin to take their place in the sea battle. We can see, too, the pattern emerging, and Captain Roskill, with a deft understanding, makes plain the strategical thought behind each move of the fleets and squadrons at sea. It is all supremely interesting as the author lays bare the various moves in the campaign and explains their place in the overall plan.

If one may venture a criticism, it would be that Captain Roskill has not, perhaps, made sufficient allowance for the shortages and for the effect of new weapons at the start of the war. Every war is fought in the early stages with the weapons bought in peace, and 1939 was no exception. From the moment war was declared in September, 1939, the Navy was stretched to, and sometimes beyond, its limit, making it impossible to carry through the whole task which faced it. It was a similar story as regards the new weapons. Until their effect was accurately known, the war at sea had to be fought partly in the dark. There had been, in the years between the wars, a lack of realism in fleet exercises, and a lack of constructive and penetrating thought in the higher direction of the Navy, both of which proved costly lapses in the stern test of war itself. Perhaps a little more emphasis on this angle in the book might have produced a truer perspective of the early operations.

But for the book as a whole there can be nothing but praise. Captain Roskill has marshalled his facts with supreme skill and has set them forth with the hand of a master. The overall picture which he paints is clear and incisive, and as his great theme unfolds itself one can only marvel at the wealth of relevant detail which he brings into his story. But, most inspiring of all, is the constant vision one gets, behind the individual operations, of that majestic weapon, command of the sea, unfolding itself in all its tremendous power.

This first volume gets the whole story away to an extremely fine start. If the second and third volumes can uphold the promise of the first, then we shall indeed have a magnificent history of the war at sea.

The Royal Naval Medical Service. Volume I. By Surgeon-Commander J. L. S. Coulter, D.S.C., R.N. (H.M.S.O.) 50s.

The War of 1939–45 was fought in the hottest and most humid of the seven seas, as well as in the coldest. Owing to the rapid development of technical equipment before and during the war, space had to be found in ships, new and old, not only for additional material but also for many extra men to work it. These men and machines had often to be housed in inelastic hulls built many years previously. Thus in the Navy overcrowding in blackout conditions, especially in hot climates, created new and difficult problems for the medical staff.

When a young sailor joins the Navy a period of trusteeship begins. The nation, being very zealous of his welfare, requires the Senior Service to take good care of him. The volume under review, which is devoted to the administration of the Royal Naval Medical Service, shows how faithfully, despite difficult conditions, this trust was implemented during the 1939–45 War. The book has been prepared under the direction of an editorial board appointed by the Government, but its editor, Surgeon-Commander Coulter, is alone responsible for the presentation of the facts and the opinions expressed. He was, however, preceded as editor by four others; for death and the exigencies of the Service necessitated several changes.

After a foreword by Surgeon-Vice-Admiral Sir Edward Greeson, late Medical Director General of the Navy, the book opens with a short chapter on the inter-war period from 1918 to 1939. The remaining chapters, of which there are 15, cover the 1939–45 War and a diversity of medical subjects. They show how rapidly the Royal Naval Medical Service expanded. At the end of 1939 it included 1,062 medical officers, 43 wardmaster officers, 322 nursing sisters, 3,640 sick berth ratings, and 265 V.A.DS. By May, 1945, the number of medical officers had risen to 2,535. In addition, there were 138 wardmaster officers, 1,095 nursing sisters, 12,000 sick berth staff, and 3,893 members of the V.A.D. There are chapters on the conditions of service of the sick berth staff and the work of Queen Alexandra's Royal Naval Nursing Service. During the war, members of the Q.A.R.N.N.S. were awarded more than a hundred honours and decorations.

A chapter on the recruitment and medical supervision of the W.R.N.S. is contributed by the late Surgeon-Lieutenant-Commander Genevieve Rewcastle, the only woman who has ever held a commission in the R.N.V.R. Chapters on medical transport and on hospital ships follow. Others are on naval medical stores and equipment; preventive medicine; the Fleet Air Arm, including such diverse subjects as medical arrangements for naval air stations and operational fatigue in aircraft carriers; medical establishments at home and abroad; the dental branch of the Navy; and on blood transfusions. Few know that, through the medium of the Navy's own transfusion service, 113,918 people of Yorkshire contributed their blood to sailors during the war. Between 1939 and 1945 327 members of the sick berth branch gave their lives. One was posthumously awarded the Albert Medal.

This book, which is well written, includes a number of interesting illustrations and an adequate index. It has succeeded in avoiding a purely academic level, and contains much of interest to the ordinary man and woman. It pays tribute to the men and women of the medical and nursing professions, mostly volunteers from civil life, who between 1939 and 1945 gave devoted service to the Royal Navy ashore and afloat in every theatre of war.

The British Submarine. By Commander F. W. Lipscomb, O.B.E., R.N. (Adam and Charles Black.) 25s.

Submarines have been in existence in the Royal Navy for just over 50 years, but they are still somewhat of a mystery to many people. Commander Lipscomb, who was himself a submariner, has now produced for the general public a clear, non-technical description of what a submarine is like and how it works.

Having taken the reader for ' a walk through a T-class boat ', he enumerates the officers and principal ratings who are in charge of and manage a large submarine, and explains the duties they each perform. Some popular questions are answered. The need for shore bases and depot ships, without which submarines could not be maintained in service, is made clear.

The chapter on accident, escape, and salvage describes some of the many things that may occur in these circumstances. In this connection Rear-Admiral Simpson, who writes the foreword, calls the attention of the reader to certain basic facts which must be borne in mind.

The early history of how submarines came to be introduced into the Royal Navy is sketched. This survey is continued up to the outbreak of the 1914–18 War, by which time the boats had greatly increased in size and capability of performance.

A few of the principal exploits of British submarines in the 1914–18 War are briefly recounted, but lack of space prevents more than the barest outline being given of all that they did.

About half the book is devoted to a factual description of the salient features of the exploits of our submarines and of those of the Allies during the 1939–45 War. Again, they are necessarily only a small fraction of the whole tale. These accounts are grouped into areas—Home Station, Mediterranean, and Far East—for each calendar year of the war. Good illustrations and diagrams are provided.

Four interesting reference appendices are given. The last one—Submarine Tree—lists every type of British submarine built from 1901 onwards, together with particulars of armament, engines, endurance, etc.

From the point of view of general interest the book should have a wide sale, but its reference value is slightly discredited by the number of minor errors in the spelling of names of persons, places, and ships, in both the text and the index. More careful proof-reading would have detected these mistakes. Three errors of fact may be mentioned. On page 144, the *Scharnhorst* did not sink the *Jervis Bay :* the enemy was the pocket battleship *Admiral Scheer*. On page 228, the French *Courbet* (a battleship, not a cruiser) had already been sunk as a blockship before the Germans attacked her, a fact that they did not realize at the time. The worst mistake occurs on page 186. The orders for Convoy P.Q.17 to disperse and to scatter emanated from the Admiralty, not from " the Admiral " (*i.e.*, Sir John Tovey). The result of the omission of the terminal letters ' ty ' is to give an entirely wrong impression. For this it is most unlikely that the author is the culprit—even if a galley is corrected, the printers always have the last say. If a second edition is called for, these blemishes will no doubt be corrected.

On the whole, however, this book can be recommended to the general public, who should now have no difficulty in understanding and realizing what the British Submarine Service has accomplished.

ARMY

So Full a Glory. By Major-General Sir Guy Salisbury-Jones, K.C.V.O., C.M.G., C.B.E., M.C. (Weidenfeld and Nicolson.) 21s.

Major-General Salisbury-Jones is to be congratulated on the preparation of this delightful biography of Marshal de Lattre de Tassigny, which not only increases our knowledge of the operations carried out by the French Army during the late war, but brings to light all the details of the romantic career of a great French leader, who after restoring glory to French arms, was posthumously awarded his country's highest honour, the baton of a Marshal of France.

Born in 1889, in the village of Mouilleron-en-Pareds, Jean, the only son in a family that had held the mayoralty of his birthplace for nearly 140 years, was commissioned into the 12th Dragoons in 1911. After serving with the Cavalry during the years 1914–1915, when he was wounded leading a charge, he transferred to the Infantry for the remainder

of the war, at the end of which he was an Officer of the Legion of Honour with eight mentions in despatches. Wounded many times " his conduct had been beyond reproach and his courage, both physical and moral, had been second to none."

During the inter-war period he served for four years under Lyautey in Morocco, earning more distinction and two more wounds; passed through the *Ecole de Guerre;* joined the staff of the *Conseil Superieur de la Guerre* under Weygand; and commanded the 151st Regiment at Metz, which he handed over to his successor as a " magnificent Regiment, which is at the same time an excellent instrument of war."

After completing his course at the so-called ' School for Marshals ' in 1938, he was appointed Chief of Staff of the Fifth French Army in March, 1939, and in January, 1940, took command of the 14th Infantry Division, which on 10th May was resting near Luneville.

Committed piecemeal, this division held the Aisne crossings in the vicinity of Rethel and when, after Dunkirk, the second stage of the German offensive began, withdrew fighting to Clermont-Ferrand. In this short campaign the story of the division and its leader " is an oasis of refreshing glory in a desert of despondency and gloom." After the armistice, though no collaborator, he accepted a command under the Vichy Government and later served under Weygand in North Africa, but on the downfall of the latter was recalled to France, where soon afterwards he was betrayed and after trial as a ' rebel ' was sentenced to ten years imprisonment at Riom. Eight months later, with the help of his wife and son, he escaped to reach London on 17th October, 1943.

The account of his career till the end of the war in 1945 is better told in his own book *Histoire de la Premiere Armée Francaise*, but General Salisbury-Jones shows how much he owed to the patience and sympathy of the American leaders under whom he served. General Devers, in a tribute to de Lattre, aptly summed this up when he said: " For many months we have fought together—often on the same side."

After the war he restored the situation in Indo-China, but the death of his only son in that theatre left an incurable wound and, soon after his return to France, he died after an operation on 11th January, 1952, and " without warning the most dazzling light which had illuminated the French scene for years had been suddenly extinguished."

Throughout this biography the author has striven to indicate the qualities and methods which enabled de Lattre to be so successful. Allied to an immense physical and mental energy was the desire for perfection in all he did. He refused to accept defeat in any form and his patriotism could allow no self interest. His insistence on intensive training, his appeal to youth, and his care for his men enabled him to demand the impossible and often get it.

What Time the Tempest. By Waldo Smith. (Ryerson Press, Toronto.)

Dr. Waldo Smith, a professor of Church history, served throughout the 1939–45 War as a chaplain in the 1st Canadian Armoured Brigade, which had its first taste of action during the ill-starred raid on Dieppe in 1942. It then took part in the Sicilian campaign and from there fought through Italy with the Eighth Army.

Dr. Smith has written a book that is both moving and sincere, and one that, in its way, is a piece of authentic history of the war. He shows us the padre's view of the fighting and, so vital is his skill with his pen, the whole scene comes vividly alive as we read. Through his eyes we can see the human part of the war, the individual thoughts and reactions of men as they go in to fight. The professional military historian thinks of divisions, battalions, companies, but to the regimental padre they are individuals, each with their own hopes, fears, loyalties, and private thoughts.

It is, perhaps, this concentration on the individual soldier rather than on the unit which makes Dr. Smith's book one to treasure and remember. He can keep before us the fundamental truths, and can relate the battle to the essential feelings of the individual. So, through his account, one can approach closer to reality and see, in the individual

feelings of men, the surge of action, not as the general, or even the company commander, sees it, but as it appears to the soldier himself, revealed in intimate talk to the soldier's friend, his padre.

This is a notable book, bringing a picture of war from a new and unexpected angle. It deserves to be widely read.

The War in Korea. By Major R. C. W. Thomas, O.B.E. (Gale and Polden.) 10s. 6d.

The Korean war is still fresh in the minds of most people and it was a happy idea that led Major Thomas to record, in this small book, the essential features of the campaign before they become forgotten. Local wars, such as this one was, too often are allowed to fade into the background with the result that many lessons which can be learned from them are lost.

This little book gives a very fair, though somewhat simplified, account of the main operations. The author has approached his subject with an objective eye, and has concerned himself more with the overall picture of the campaign than with the details of the fighting. It is probably too early as yet to assess the war in its true strategical picture, and this book can do no more than present the main operations in the sequence in which they occurred. Yet, as such, it has a distinct value and may well serve in the future as the background account from which we may study the lessons to be learned.

The book is well illustrated with photographs which give an excellent idea of the terrain over which the main fighting took place.

All This and a Medal Too. By Tim Carew. (Constable.) 15s.

This autobiography, covering the years 1937–1950, makes pleasant, interesting, and in many ways instructive reading. The author was fortunate in the variety of his experiences. He also has a gift of anecdote and description which gives his story the fluidity of an exciting and amusing novel. Knowing how easily any autobiography can become monotonous through an excessive use of the first personal pronoun, Carew has had the good sense to dilute his own narrative with interludes from the lives of others, whose paths crossed his own.

After a brief account of his career at a public school he describes his experiences as a junior constable of the City Police, a job which he was learning at the outbreak of war. He enlisted in the Household Cavalry, and gives an amusing account of stables, riding school, and all the other items in the life of a cavalry recruit, which may revive nostalgic memories for the older generation of soldiers. He remained with the cavalry during its rearmament, first as infantry and then as an armoured car unit, but in 1942 he was transferred to the Parachute Regiment.

After undergoing the full paratroop training he was selected, to his obvious disappointment, for O.C.T.U. training, and so missed active service with the airborne forces. The chapters dealing with this phase of his career are, however, specially interesting as giving a cross section of the reactions of individuals to this new form of soldiering.

The rest of the book deals with his service as an officer in the Prince Consort's Own Gurkha Rifles, and even in this phase of his career he was fortunate in the variety of his experiences. There is an informative first-hand account of the extraordinary situation which British and Indian troops had to face in Indonesia after the Japanese surrender.

The book has its lighter touches in plenty, including glimpses of the night life of warriors, without which no modern war book seems quite complete. Altogether this is a diverting story, well written and modestly narrated.

History of The Manchester Regiment, 1st and 2nd Battalions, 1922–1948. By Lieutenant-Commander A. C. Bell. (J. Sherratt and Son.) 25s.

This is the story of the two Regular battalions of the Regiment, both of which had been converted to machine-gun units just previous to the 1939–45 War. To compile

the history of a battalion, scattered by platoons over a divisional front, whose role is more effective than spectacular, is no easy task. The author has solved the difficulty to some extent by basing the story on the actions of the brigades to which the companies were allotted. The services of each battalion are described in chronological order but the narrative includes rather too much background to the operations in which the Regiment took part.

Serving in Singapore at the outbreak of war, the 1st Battalion had the misfortune to be captured, and 378 of all ranks died as prisoners. Reformed from the 6th Battalion, the unit served in North-West Europe with the 53rd Division from 27th June, 1944, until the end of the war, co-operating with much effect in attack and defence in a variety of conditions.

The 2nd Battalion, serving at home on the outbreak of war, went to France with the 2nd Division. This formation was engaged from the outset of the *blitzkrieg* until it was almost destroyed in the final defence of the Canal Line. Throughout these operations the Battalion was continuously employed in its support role and, on several occasions, inflicted heavy loss on the enemy. In 1942, the 2nd Division moved to India and thence, early in 1944, to Assam for the relief of Kohima and Imphal. In this campaign the sub-units of the Battalion were constantly in action covering the attacks of their brigades in very arduous conditions. The efficient support provided again showed the value of well-handled medium machine-guns in attack and brought congratulatory messages from the Commander-in-Chief and formation commanders. The Battalion took part in the decisive battle for Mandalay before the whole division was withdrawn to prepare for a special operation against Rangoon which, however, proved unnecessary. One company served with the 36th Division in the Arakan and later in eastern Burma. The end of the campaign found the Battalion united in India.

This volume is well produced, illustrated, and provided with sketch-maps and an index. There are the usual appendices and matters of regimental interest are carefully recorded.

The Fighting Sudanese. By H. C. Jackson. (Macmillan and Co.) 8s. 6d.

In this small book Mr. Jackson, formerly governor of the provinces of Berber and Halfa in the Sudan, pays a glowing tribute to the courage and loyalty of the Sudanese, of whom he has had much experience. It is, indeed, a fine story that he has to tell, and one that deserves to be read and treasured as a record of these brave and fearless people.

Mr. Jackson introduces the reader to the Sudanese by a few well-chosen accounts of their valour in the past, and then leads straight into the main part of his book, which is an account of the work of the Sudan Defence Force in the last war. It was this gallant force, together with a few British troops, who held the Italians at bay until at last reinforcements could be sent and the enemy driven out. How they did it, and the lengths to which they went to deceive the Italians as to their real strength, makes a fascinating account.

Sudan, now much in the news, is a country about which relatively few people know very much. This little book, then, is timely in its appearance and makes a good introduction to further knowledge of this very loyal and gallant people.

The Unseen and Silent. Translated from the Polish by George Iranek-Osmecki. (Sheed and Ward.) 21s.

This collection of adventures of paratroops of the Polish Home Army unfolds an aspect of the 1939–45 War which will be new to many readers. The stories are narrated by Poles who trained in the United Kingdom in order to be dropped in German-occupied Poland to organize and lead the underground movement. False names are allotted to the narrators, for reasons obvious to anyone who knows the ways of Communist police. But every account bears the unmistakable ring of truth.

It must have been an extraordinary kind of war, perhaps unique even in the annals of resistance movements and guerilla warfare. The Polish Home Army was no mere conglomeration of saboteurs or small guerilla bands. It was an organized army with a commander, headquarters, and a proper staff, and with its divisions, distributed about occupied Poland, also similarly equipped. One of the most astonishing features of the Polish Home Army's operations was the apparent ease with which the Poles carried out substantial troop movements, using motor transport and often by day, through country in full military occupation of the *Wehrmacht*.

Nor were the Germans their only enemy. They had to cope with 'quisling' Polish organizations and forces, both of the Fascist and Communist brand. Another of their problems was the heterogeneous horde of East Europeans and Asiatics, formed by the Germans into the "Ost Legion" to do their dirtier work for them. These turn-coats made up for their dubious fighting value by a reputation for bestial atrocities. By comparison, the German forces appear almost in the light of clean and honourable foes.

But the grimmest and most sinister of all ordeals was the treatment accorded to the Polish underground by its supposed ally, the Red Army. The plain facts about the Warsaw rising ought to be studied by everyone who wishes to see the present Kremlin tyranny in its true light. For 63 days the Polish forces held an important part of the city against strong German forces backed by heavy artillery and air power. Across the river, within sight of the Polish positions, lay the suburb of Praga, strongly held by the Red Army. Not a finger was lifted by the Russians to support the Polish resistance throughout these 63 days, though Polish liaison officers crossed the river to make specific requests for help. Most of them were arrested or shot.

This book makes a valuable contribution to military and political history, and would have been all the better for having an index.

AIR

Royal Air Force, 1939–1945. Volume II. The Fight Avails. By Denis Richards and Hilary St. G. Saunders. (H.M.S.O.) 13s. 6d.

The late Hilary St. G. Saunders, at one time Librarian to the House of Commons, joins Denis Richards in this second volume as author of some of the chapters.

The history opens with the dismal story of the evacuation and fall of the great fortress of Singapore and the loss of the *Repulse* and the *Prince of Wales*. In the air at this time our position could hardly have been worse. We read how Air Vice-Marshal Pulford, the A.O.C. there, had wholly inadequate resources at his disposal: obsolete aircraft, a handful of partially trained pilots, and practically no concrete runways or repair facilities. On the other hand, the enemy was well equipped with modern aircraft—particularly the Zero fighters, manned by skilled Japanese pilots with fighting experience in China. Little wonder, then, that the R.A.F., like the other Services, could do little to check the invasion through Malaya, although they fought gallantly against impossible odds.

After the fall of Burma, we turn to an entirely different side of the war—the growing offensive of Coastal Command against German submarines, which had for so long been causing serious losses to our merchant ships. From now onwards, pilots carrying out this unspectacular work were beginning to have their rewards—mainly due to A.S.V. (air to surface vessel) contacts with the U-boats, and the newly invented Leigh light, which lit up the target by night. Very long range aircraft were also having a large measure of success over the Bay of Biscay.

About this time, too, Air Marshal Harris became Commander-in-Chief of Bomber Command. With modern types of heavy aircraft coming into production—for example, the Lancaster—and also with the aid of new radar devices, he was able to step up heavily and more accurately his offensive against towns and industrial targets in the Reich.

The thousand bomber raids were also beginning. It is interesting to note that it was not Harris's initiative, as is generally supposed, but an air staff directive approved by the Cabinet which ruled that the attacks should be aimed at " the morale of the enemy civil population and in particular of the industrial workers."

A large part of the book naturally deals with the siege of Malta and the ebb and flow of the fighting in the Middle East. For many months both the Italians and Germans did everything in their power to liquidate Malta, which, from its position in the Mediterranean, was always a thorn in their side. They very nearly succeeded but not quite. We get a good picture of the tough Air Force Commander—Hugh Pughe Lloyd—encouraging his pilots and ground crews to further efforts amidst a hail of bombs. But it is above all from the great victories in the Western Desert that we learn what can be achieved by the correct use of air power. Due to far-sighted and careful planning by Peter Drummond behind the scenes and the skilful strategical and tactical direction on the part of Tedder and Coningham, the Desert Air Force attained such a high degree of air superiority that the Army was able to carry out its advance with a minimum of interference.

These are the main events described. It will thus be seen that the canvas is a wide and crowded one. On the whole the authors have succeeded in giving a synoptic, but inevitably much compressed, picture of the many parts played by the Royal Air Force during these critical years; of how they operated with great efficiency, sometimes as an independent force, sometimes in close co-operation with the other two Services.

New Zealanders with the Royal Air Force. Volume I. By Wing Commander H. L. Thompson. (War History Branch, New Zealand.) 35s.

This official history of the New Zealand contribution in the air to the 1939–45 War is produced by the War History Branch of the Department of Internal Affairs, Wellington, New Zealand. The present volume, the first of three, embraces the period between September, 1939, and December, 1942, and, except where the story expands into the Battle of the Atlantic and down the west coast of Africa, is confined to events in the European theatre. The European portion of the Mediterranean area, however, is not included in this volume, and the only air attacks upon Italy referred to are those in which the aircraft operated from England.

Official Dominion records are very few, but full use is made of the records preserved by the Air Ministry in London, which comprise combat reports and diaries of units in Royal Air Force Commands, etc. Authentic information about the German side of the picture has been obtained from captured enemy documents.

The method of presentation is to record the work and achievements of New Zealand airmen against a background of the operations of the Royal Air Force. The various chapters—there are 17 in all—describe the work of all three operational Air Commands (Bomber, Fighter, and Coastal) over the land and over the sea. The sections of each chapter begin with the overall view of the general strategic situation during the relevant period, in order to put the reader in the picture; a useful chronology of principal events, with particular reference to air operations in Europe, is also given in Appendix I. Then follows the particular part played by R.N.Z.A.F. squadrons, and by those R.A.F. squadrons which contained New Zealand personnel. As the title of the book implies, the accounts of the achievements of individual New Zealanders form a large proportion of the volume.

New Zealand airmen have been closely associated with those of the Home Country from the very beginning—the days of the Royal Flying Corps and the Royal Naval Air Service—and their contribution has steadily grown ever since. The increase in numbers is impressive; the proportion of casualties is regrettably high.

A book which recounts the individual efforts of many New Zealanders would not be complete without biographical details of the airmen mentioned. This interesting

information is given in footnotes, the great number of which tend rather to distract the reader. The alternative arrangement—to group all these details together in an Appendix —may be preferred by some.

With regard to events in the Mediterranean, it is not easy to fix a dividing line between the European theatre and the Middle East. Occurrences in the northern half of the Mediterranean would seem to belong more properly to the European theatre. It appears to be the editor's intention, however, to defer all details about the defence of Malta and of the offensive sorties flown from there, in which New Zealanders participated, until the volume on the Middle East. A word in explanation would not have been amiss. Also, the particulars of Italian aircraft have yet to be given.

A few statements in the general narrative are not correct. For instance, on page 116, the *Kelly* did not take part in the Battle of Narvik ; on page 162, no air attack was made on the *Scharnhorst* just before she broke out into the Atlantic, and even when she was bombed immediately after her arrival at Brest, no damage was caused ; and on page 291, the *Valiant* and *Queen Elizabeth* were not mined, but were severely damaged by explosive charges placed by Italian underwater assault craft.

In all, however, Wing Commander Thompson is to be congratulated on the production of a very readable account of what New Zealanders achieved in air operations. The long and monotonous patrols flown over the Atlantic were often entirely non-productive, and the periods of training in preparation for operational duties must have been very trying to young airmen who were eager to get into action with the enemy.

The book is well illustrated with excellent maps, diagrams, and photographs. It should prove of great interest, not only to New Zealanders, but also to everyone in the British Empire who appreciates deeds of valour and endurance in circumstances which were often extremely trying.

Return From Hell. By Jules Roy, D.F.C. (Kimber.) 15s.

Jules Roy won great distinction as captain of a bomber crew in the Free French Air Force working with the R.A.F. His squadron operated from a Yorkshire airfield and took part in the big mass bombardments of Germany during 1944 and 1945. In all, he made 37 sorties. A cultured man and a poet, he was in his late thirties at the time and had outgrown his youthful illusions, so, in this translation of his diary, written up day by day during operations, is to be found something rather different from the reminiscences of most airmen. To begin with, " the difference between the R.A.F. and ourselves is that their average age is 22 while ours is 30. It's not the same thing." We are also reminded that Captain Roy and his compatriots were exiles serving under a foreign command. " Our exile is wearing us and is gradually rotting us ", says one entry. Another records a visit from the British Minister for Air who " smothered us with bouquets ", and observes that some expression of gratitude from the Free French Government would have been more acceptable.

Later is noted the false modesty—false, but " all to our credit "—of the French crews who keep silent when a big mission is cancelled, whereas the English " jump for joy and rush to raid the canteen beer."

The strength of the book lies in the faithful record of the life of the squadron, the almost laconic accounts of night bombing raids with all their attendant hazards and horrors. One can hardly wish for a more vivid description of this type of warfare, although some technical terms may puzzle the layman. In his preface Captain Roy almost apologizes for revealing his true state of mind : the fears and doubts which beset him while he followed what he calls his " exterminating trade." He need not worry. In this age of realism the myth of the absolutely fearless and irreproachable knight-errant of the air has surely been dispelled.

When Captain Roy first examined a Liberator he remarks upon its " admirable engines " and the American forethought for the protection and comfort of the crew,

But he feels that his squadron, flying Halifaxes, do just as well as those who serve in these " luxury kites."

One is not surprised to come upon unfavourable remarks concerning the English Summer of 1944, but it is fretfully asked why our metereological pundits are incapable of knowing the weather four hours ahead. In August, 1944, the Allied successes in Normandy are hailed as finer than Valmy, finer than the revolution of 1789. There is, however, a prophetic utterance at the end of September: " the victory will not come this year ", and here follows some criticism of the R.A.F., whose tactics are called unadaptable, leaving no room for improvisation or genius. Great success is attributed to the German ' intruder ' raids as late as March, 1945, for on one night it is said that Bomber Command was completely at the mercy of the hostile fighters.

With peace in sight Captain Roy can say with all simplicity: " I have played the game to the end without cheating." In his opinion the game will not be renewed, for the war planes of 1960 will be robots. And they will not write diaries.

ADDITIONS TO THE LIBRARY

(* Books for Reference in the Library only)

GENERAL

ASSIGNMENT TO CATASTROPHE. VOLUME I. Prelude to Dunkirk, July, 1939–May, 1940. By Major-General Sir Edward Spears. Demy 8vo. 332 pages. (Heinemann, 1954.) 25s.

BEYOND THE IRON CURTAIN. By Sir David Kelly, G.C.M.G., M.C. Crown 8vo. 83 pages. (Hollis and Carter, 1954.) 5s.

BREATHING IN IRRESPIRABLE ATMOSPHERES. By Robert H. Davis, Medium 8vo. 386 pages. (St. Catherine Press, 1954.) Presented by the Author.

BRITAIN. An Official Handbook. Medium 8vo. 334 pages. (H.M.S.O., 1954.) 10s.

THE EUROPEAN INHERITANCE. In Three Volumes. Edited by Sir Ernest Barker, Sir George Clark, and Professor P. Vaucher. Medium 8vo. 1,340 pages. (Oxford University Press, 1954.) 105s.

FIRE IN THE ASHES. By Theodore H. White. Demy 8vo. 383 pages. (Cassell, 1954.) 15s.

GOVERNMENT AND PARLIAMENT. By Herbert Morrison. Medium 8vo. 363 pages. (Oxford University Press, 1954.) 21s.

THE HISTORY OF ASTRONOMY. By Giorgio Abetti. Demy 8vo. 345 pages. (Sidgwick and Jackson, 1954.) 25s.

I WAS MONTY'S DOUBLE. By M. E. Clifton James. Demy 8vo. 192 pages. (Rider, 1954.) 12s. 6d.

I SURVIVED. By Godfrey Lias. Demy 8vo. 224 pages. (Evans, 1954.) 12s. 6d.

THE INDIAN OCEAN. By Alan Villiers. Demy 8vo. 224 pages. (Museum Press, 1954.) 21s.

THE INVISIBLE WRITING. The Final Volume of Arthur Koestler's Autobiography. By Arthur Koestler. Demy 8vo. 431 pages. (Hamish Hamilton and Collins, 1954.) 21s.

IRAQ, 1900–1950. By Stephen Hemsley Longrigg. Medium 8vo. 436 pages. (Oxford University Press, 1954.) 35s.

THE LETTERS OF THEODORE ROOSEVELT. VOLUME VII. The Days of Armageddon, 1909–1914. And VOLUME VIII. The Days of Armageddon, 1914–1919. Edited by Elting E. Morrison. Royal 8vo. 1,620 pages. (Harvard University Press, Cambridge, Massachusetts, 1954.) 130s. each. Presented by the Publishers.

THE LIFE OF LORD ROBERTS. By David James. Demy 8vo. 503 pages. (Hollis and Carter, 1954.) 30s.

OUR EVEREST ADVENTURE. By John Hunt. Super Royal 8vo. 127 pages. (Brockhampton Press, 1954.) 12s. 6d.

QUEEN SALOTE AND HER KINGDOM. By Sir Harry Luke. Demy 8vo. 136 pages. (Putnam, 1954.) 9s. 6d.

THE QUEEN'S BEASTS. By H. Stanford London. Foolscap Folio. 56 pages. (Newman Neame, 1954.) 12s. 6d.

UNDERGROUND FROM POSEN. By Michael Duncan. Demy 8vo. 192 pages. (Kimber, 1954.) 12s. 6d. Presented by the Publishers. (See Review in this JOURNAL.)

THE UNSEEN AND SILENT. Translated by George Iranek-Osmecki. Demy 8vo. 190 pages. (Sheed and Ward, 1954.) 21s. Presented by the Publishers. (See Review in this JOURNAL.)

LE REARMEMENT CLANDESTIN DU REICH, 1930–1935. By Georges Castellan. Medium 8vo. 569 pages. (Librairie Plon, 1954.) Presented by the Author.

RETIRE AND ENJOY IT. By Cecil Chisholm. Demy 8vo. 240 pages. (Phoenix, 1954.) 15s.

STRATEGY FOR THE WEST. By Marshal of the Royal Air Force Sir John Slessor, G.C.B., D.S.O., M.C. Crown 8vo. 162 pages. (Cassell, 1954.) 9s. 6d. Presented by the Publishers. (See Review in this JOURNAL.)

SUDAN DAYS AND WAYS. By H. C. Jackson. Demy 8vo. 261 pages. (MacMillan, 1954.) 18s.

*THEIR NAMES LIVETH. VOLUME I. Some Pictures of Commonwealth War Cemeteries, 1914–18 and 1939–45. By The Imperial War Graves Commission. Royal Quarto. 32 pages. (Imperial War Graves Commission, 1954.) 15s.

TIBETAN JOURNEY. By George N. Patterson. Demy 8vo. 232 pages. (Faber, 1954.) 15s.

WORLD PRODUCTION OF RAW MATERIALS. By the R.I.I.A. Demy 8vo. 104 pages. (Royal Institute of International Affairs, 1954.) 7s. 6d.

THE RIBBENTROP MEMOIRS. By Joachim von Ribbentrop. Demy 8vo. 216 pages. (Weidenfeld and Nicolson, 1954.) 18s.

NAVAL

DEEP DIVING AND SUBMARINE OPERATIONS. By Robert H. Davis. Medium 8vo. 658 pages. (St. Catherine Press, Ltd., 1954.) Presented by the Author.

THE KELLY. By Kenneth Poolman. Demy 8vo. 214 pages. (Kimber, 1954.) 15s.

MEDICAL HISTORY OF THE SECOND WORLD WAR. VOLUME I. Administration. By Surgeon-Commander J. L. S. Coulter. Super Royal 8vo. 512 pages. (H.M.S.O., 1954.) 50s. Presented by the Publishers. (See Review in this JOURNAL.)

RAIDERS FROM THE SEA. By Rear-Admiral Lepotier. Demy 8vo. 200 pages. (Kimber, 1954.) 15s.

SOLDIER SAIL NORTH. By James Pattinson. Demy 8vo. 224 pages. (Harrap, 1954.) 10s. 6d.

THE WAR AT SEA. VOLUME I. History of the Second World War. By Captain S. W. Roskill, R.N. Super Royal 8vo. 664 pages. (H.M.S.O., 1954.) 42s. Presented by the Publishers. (See Review in this JOURNAL.)

ARMY

A SHORT HISTORY OF THE SECOND DIVISION, 1809–1954. By Major-General B. A. Coad, C.B., C.B.E., D.S.O. Medium 8vo. 20 pages. (Private, 1954.) Presented by the Author.

*HISTORY OF THE MANCHESTER REGIMENT. By Lieutenant-Commander A. C. Bell. Medium 8vo. 554 pages. (John Sherratt and Son, 1954.) 25s. Presented by the Publishers. (See Review in this JOURNAL.)

WAR JOURNAL OF THE FIFTH (KENYA) BATTALION, THE KING'S AFRICAN RIFLES, 1939–45. By W. D. Draffan and T. C. C. Lewin. Demy 8vo. 151 pages. (Private, 1954.) Presented by the Regiment.

THE FIGHTING SUDANESE. By H. C. Jackson, Crown 8vo. 85 pages. (Macmillan, 1954.) 8s. 6d. Presented by the Publishers. (See Review in this JOURNAL.)

*UNITED STATES ARMY IN WORLD WAR II. China-Burma-India Theater. Stilwell's Mission to China. By Charles F. Romanus and Riley Sunderland. Royal 8vo. 441 pages. (Military History Department of the Army, Washington, 1954.) 47s. 6d.

*United States Army in World War II. War Department. Strategic Planning for Coalition Warfare, 1941–1942. By Maurice Matloff and Edwin M. Snell. Royal 8vo. 454 pages. (Military History Department of the Army, Washington, 1954.) 32s. 6d.

All This and a Medal Too. By Tim Carew. Demy 8vo. 252 pages. (Constable, 1954.) 15s. Presented by the Publishers. (See Review in this Journal.)

The Decisive Battles of the Western World and their Influence upon History. Volume I. From the Earliest Times to the Battle of Lepanto. By Major-General J. F. C. Fuller, C.B., C.B.E., D.S.O. Medium 8vo. 601 pages. (Eyre and Spottiswoode, 1954.) 30s. Presented by the Publishers. (See Review in this Journal.)

The Edge of the Sword. By Captain A. Farrar-Hockley, D.S.O., M.C. Demy 8vo. 274 pages. (Muller, 1954.) 12s. 6d.

German Military Intelligence. By Paul Leverkuehn. Demy 8vo. 209 pages. (Weidenfeld and Nicolson, 1954.) 16s.

So Full a Glory. Life of Marshal de Lattre de Tassigny. By Major-General Sir Guy Salisbury-Jones. Demy 8vo. 288 pages. (Weidenfeld and Nicolson, 1954.) 21s. Presented by the Publishers. (See Review in this Journal.)

What Time the Tempest. By Waldo E. L. Smith, M.C., M.A., Ph.D. Medium 8vo. 305 pages. (The Ryerson Press, Toronto, 1953.) Presented by the Author. (See Review in this Journal.)

AIR

The Amazing Mr. Doolittle. By Quentin Reynolds. Demy 8vo. 313 pages. (Cassell, 1954.) 18s.

The ABC of Helicopters. By John W. R. Taylor. Crown 8vo. 55 pages. (Ian Allan, Ltd., 1954.) 2s. 6d.

Ideas and Weapons. Exploitation of the Aerial Weapons by the U.S.A. during World War I. By I. B. Holley. Medium 8vo. 222 pages. (Yale University Press, 1953.) $3.75.

New Zealanders in the Royal Air Force. Volume I. European Theatre, September, 1939–December, 1942. By Wing Commander H. L. Thompson. Medium 8vo. 408 pages. (Geoffrey Cumberlege, Oxford University Press, 1954.) 35s. Presented by the Publishers. (See Review in this Journal.)

Return from Hell. By Jules Roy. Demy 8vo. 112 pages. (Kimber, 1954.) 15s. Presented by the Publishers. (See Review in this Journal.)

Tiger Squadron. The Story of 74 Squadron, R.A.F. By Wing Commander Ira ("Taffy") Jones, D.S.O., M.C., D.F.C., M.M. Demy 8vo. 286 pages. (W. H. Allen, 1954.) 15s.

V2. By Major-General Walter Dornberger. Demy 8vo. 264 pages. (Hurst and Blackett, 1954.) 16s.

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